Service Ma

Vol.

Summary **Technical Descriptions** Portable Video Cassette Recorder

Panasonic



SPECIFICATIONS

Power Source:

12 VDC

Battery LCR-1812P Elec. Tuner Unit PV-A32E Prog. Tuner Unit PV-A35P (Not available independently)

Multiple AC Adaptor PV-A40

Power Consumption: Television System:

Approx. 9.4W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

1 track

Tape Format:

Tape width 1/2" (12.7 mm), high density

tape

Tape Speed:

SP mode: 1-5/16 i.p.s (33.35 mm/s) LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 1 (SP), 2 (LP) or 3 (SLP) hours

with NV-T60

2 (SP), 4 (LP) or 6 (SLP) hours

with NV-T120 Less than 6 min. with NV-T120

FF/REW Time:

Video: 2 Rotary heads

Heads:

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Input Level:

Video: VIDEO IN Jack (RCA type) $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,

PV-A32E \ 75Ω unbalanced

UHF Input: UHF Ch14-Ch83, or

PV-A35P 300Ω balanced

Output Level:

Video: VIDEO OUT Jack (RCA type)

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: AUDIO OUT Jack (RCA type) $-6 \, \mathrm{dB}$, $600 \, \Omega$ unbalanced

RF Modulated: Ch3/Ch4 switchable, 72 dB μ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz~8kHz, (10 dB down) LP: 100 Hz ~ 6 kHz, SLP: 150 Hz ~ 5 kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB

LP mode: better than 40dB SLP mode: better than 40dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB LP mode: better than 40dB

SLP mode: better than 40 dB

Operating

Temperature: 32°F-104°F (0°C-40°C)

Operating Humidity: 10%-75%

Weight: Dimensions: 13.5 lbs (6.1 kg) (with battery) 12"(W) × 4-1/2"(H) × 9-11/16"(D)

 $304(W) \times 114(H) \times 245(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic

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INTRODUCTION

This service manual contains information which will allow service technicians to understand and service the Panasonic portable VHS Video recorder Models PV-4100 and PV-4500.

These Models consist basically of the PV-4000 Video tape recorder and various accessories to compliment the deck.

Some of the many special features include extended recording time of up to 6 hours, portability, feather touch function controls, SLP search, convenient 3 power source system (battery pack, car battery or 120 V household AC outlet), minimal picture inteference during add-on recoding, multi-motion playback at your option and a battery saving feature when the recorder is used with PK-700, 800, 750, 530, 530A, 601, 651, 700A, 701, 751, 771, or 801 color cameras.

In addition this deck features the simplified and reliable new tape loading method, a directly driven head cylinder, capstan servo and it is lightweight and very compact.

These features in addition to the basic VHS format make the PV-4100/PV-4500 an ideal unit for your education, recreation and entertainment.

Just slightly ahead of our time..... Panasonic

CONTENTS

FEATURES	1-1
ACCESSORIES SUPPLIED	1-2
OPTIONAL ACCESSORIES	1-3
PV-4000	
CONTROLS AND COMPONENTS	
OPERATING COMPONENTS AND THEIR FUNCTIONS	1-5
PV-A35P	
OPERATING COMPONENTS AND THEIR FUNCTIONS	1-6
CONTROLS AND COMPONENTS	1-7
PV-A32E/PV-A40	
CONTROLS AND COMPONENTS	1-8
OPERATING COMPONENTS AND THEIR FUNCTIONS	1-9
CLOCK TIME ADJUSTMENT	
SETTING THE TIMER FOR TIMER RECORDING	1-11
TIMER RECORDING	1-13
VHS-PRINCIPLE OF OPERATION	1-14
Basic video tape recording	1-14
1. Video head	1-16
2. Azimuth recording	1-17
3. VHS color recording system	1-18
General introduction to portable VHS format and new technical features	1-20
1. Still mode playback (SLP mode)	1-20
2. Search function: cue and review	1-22
3. New capstan motor	1-22
4. New infrared photo sensor LED	1-22
5. Short fast forward function	1-22
6. Power SW automatic shut off	1-22
7. Pause reset	
8. Mode select switch	1-22
9. Add-on record	1-22
GLOSSARY OF TERMS	1-23

FEATURES

Six hours recording and playback

Thanks to the development of a new system for high density recording of video signals, recordings as long as 6 hours in length on a single NV-T120 tape are possible.

Compact and lightweight

The truly compact and lightweight portable video cassette recorder and electronic tuner/timer make it extremely convenient and easy to carry.

Minimal picture interference during add-on recording

The use of a control signal for the video recording minimizes interference that is caused by pauses during recording.

Multi-motion playback at your option

Playback at normal speed, SEARCH playback (playback in forward or reverse direction at 5-9 times normal speed), STILL-FRAME and FRAME ADVANCE playbacks can be operated during playback of the tape recorded in SLP (Super Long Play) speed. You can stop the tape temporarily during recording to avoid recording unwanted material. The Remote Control Unit permits you to operate these effects from a distance. Special camera remote operations with certain cameras (PK-751, 771 & 801).

Three-power source system

The recorder can use any of 3 power sources; a battery pack, a car battery, or household AC current (with the electronic tuner unit PV-A35P, system model No. PV-4500, the AC adaptor PV-A40, system model No. PV-4100. By using a portable video camera (optional), you can make live video and audio recording either indoors or outdoors.

Voltage selector

The AC adaptor can also be used in other countries where voltages are different (100, 120, 220, 240 V AC) by setting the voltage selector to the local voltage.

Battery-saving camera feature

A stand-by switch on the PK-700, 800, 750, 530, 530A, 601, 651, 700A, 701, 751, 771 or 801 color video cameras allow conservation of the battery pack while recording.

Unattended recording

The built-in programmable timer of the tuner unit permits unattended recording of up to 8 programs of your choice in 2 weeks. It can be preset 2 weeks in advance to record your favorite TV programs. It turns the recorder on and off and changes channels automatically.

All you have to do is to set the timer, the recording will start and stop on schedule no matter where you are.

Recording while watching another program*

(When the electronic tuner unit PV-A32E or PV-A35P (programmable) is connected to the portable deck.) Those tuners include their own built-in UHF/VHF tuners to record TV programs. So, while viewing a program on your TV set, you can record a different program at the same time with their tuners. So watch one, record the other and view it later at your leisure.

* Notice:

Recording a program on one channel while watching a different program on another channel may not be possible with certain CATV converters. "Unauthorized recording of copyrighted television programs, films, video tapes and other materials may infringe the right of copyright owners and be contrary to copyright laws."

ACCESSORIES SUPPLIED

1. PV-4100

1 pc. Video cassette tape, NV-T60	1 pc. VHF matching	1 pc. 300 ohm-	1 pc. 75 ohm
	box 75 ohm-300	75 ohm	- 75 ohm
	ohm transformer,	transformer,	adaptor,
	VSQ0055	TJB5251	TJB5250
1 pc. Antenna	1 pc. Audio input	1 pc. Microphone	2 pcs. Coaxial cable with one-touch type F connector, VJA0147
selector	attenuator,	adaptor,	
VSQS0020	VJP1164	VJPS0003	
1 pc. Earphone, VBES0001	1 pc. Battery pack, LCR-1812P	1 pc. Connection cord for auxiliary battery pack, VJA0148	1 pc. Remote control unit, VSQS0046

2. PV-4500

1 pc. Video cassette tape, NV-T60	1 pc. VHF matching box 75 ohm-300 ohm transformer, VSQ0055	1 pc. 300 ohm- 75 ohm transformer, VSQ0057	2 pc. Coaxial cable with one-touch type F connector, VJA0147
1 pc. Twin-lead cable, VJA0102	1 pc. Audio input attenuator, VJP1164	1 pc. Microphone adaptor, VJPS0003	1 pc. Remote control unit, VSQS0046
1 pc. Earphone, VBES0001	1 pc. Battery pack, LCR-1812P	1 pc. Connection cord for auxiliary battery pack, VJA0148	

3. PV-A32E

1 pc. 300 ohm-75 ohm transformer, TJB5251		1 pc. Twin-lead cable, VJA0102	
1 pc. coaxial cable with one-touch type F connector, VJA0147	8		

4. PV-A40

1 pc. Antenna selector, VSQS0020	1 pc. 75 ohm-75 ohm adaptor, TJB5250
1 pc. 300 ohm-75 ohm transformer, TJB5251	1 pc. Coaxial cable with one-touch type F connector, VJA0147

OPTIONAL ACCESSORIES

- 1/2" video cassette tape: NV-T120 Approx. 810 ft. (247m), 120, 240 or 360 min. NV-T60 Approx. 417 ft. (127m), 60, 120 or 180 min.
- Color video camera: PK-700, 800, 750, 530, 530A, 601, 651, 700A, 701, 751, 771, 801
- · Carrying case, PV-H34
- Car battery cord, PV-C34
- Battery pack, LCR-1812P/LCR-3012VBP
- Battery charger, PV-B12
- Microphone, WM-2308P

PRECAUTIONS

- Before trying to operate the unit, make sure that Timer Rec Switch is OFF.
- If the recorder is suddenly moved from a cold place to a warm place, moisture that can cause damage to both the tape and the recorder may form inside the unit. Avoid such changes in temperature, if possible.
 - When excessive moisture is present within it, it shuts off automatically to prevent damage to the tape or the video recording mechanism.
- Do not block or cover the ventilation slots on the top, back and bottom of the tuner.
 Especially avoid soft materials such as cloth or paper.
- Use the recorder in horizontal or vertical position and do not place anything heavy on the tuner, e.g. the recorder.
- Take special care not to use or store the unit for a long period of time in direct sunlight, in excessively hot, cold, damp or dusty places, or places subject to heavy vibrations.
- Do not insert fingers or any other objects into the cassette holder.

CAUTION:

TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

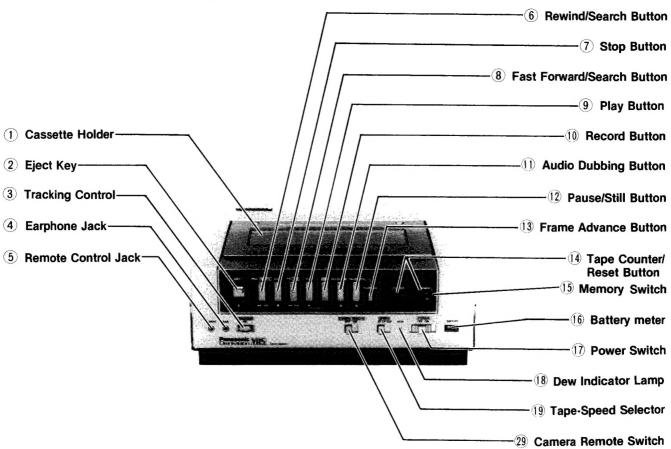
In addition to the tapes specified, the recorder will accept any cassette tape which has the VHS mark.

It is recommended that only cassette tapes that have been tested and inspected for use in 2, 4, and 6 hour VCR machines be used.

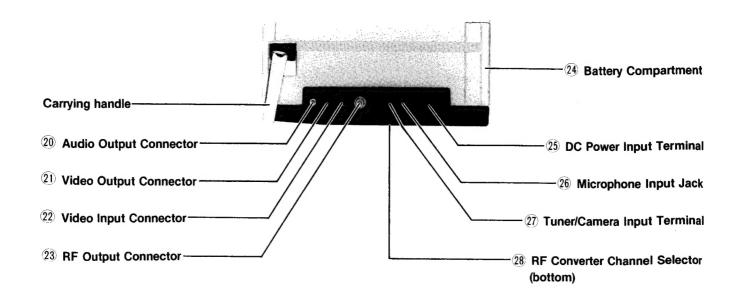
- Avoid operating or storing the unit and the video cassette near appliances generating strong magnetic fields (large motors, power transformers, or large audio speakers).
- Keep the unit away from flower vases, tub, sink, etc.
 CAUTION: If liquids should be spilled into the unit, serious damage will be caused. if you spill any liquid into the unit consult qualified service personnel.
- Do not spray any cleaner or wax directly on the unit or use forced air to remove dust.
- If you use the unit outdoors on a rainy day, take care that it does not become wet.
- If lightning occurs while recording outdoors, particularly in a wide, open field, stop recording immediately.
- Do not attempt to disassemble the unit. There are no user serviceable parts inside.
- Refer any needed servicing to qualified service personnel.

CONTROLS AND COMPONENTS

TOP and FRONT of the RECORDER



SIDE of the RECORDER



OPERATING COMPONENTS AND THEIR FUNCTIONS

TOP and FRONT of RECORDER

Cassette Holder

For insertion of the video cassette.

(2) Eject Key (EJECT)

Press this key to raise the cassette holder for insertion or removal of the video cassette.

- Do not press the Eject Key while the tape is moving. Push the Stop Button to make sure that the tape has completely stopped, and then press the Eject Key.
- If a power interruption occurs during the fast forward or rewind operation, it may not be possible to remove the cassette from the unit. When power is resumed, operate the tape in fast forward or rewind mode once again, and then push the Stop Button. After the tape has completely stopped, press the Eject Key and remove the video cassette.

3 Tracking Control (TRACKING)

Use this control to eliminate "band-shaped noise" in part of the playback image. It should be usually be left in the "FIX" position.

(4) Earphone Jack (EAR)

Connect the earphone (included) to this jack to monitor the audio signal while recording or during playback.

5 Remote Control Jack (REMOTE)

The Remote Control Unit connects here to allow temporary pause during recording and to operate the multi-motion playback (still-frame, frame-byframe, slow motion and search) from a distance.

(6) Rewind/Search Button (REW)

Push this button to rewind the tape. When fully rewound, the tape will stop automatically. This button is also used in the SLP PLAYBACK mode for TAPE SEARCH in the REVERSE direction.

7 Stop Button (STOP)

Push this button to stop the Recording, Playback, Rewind, Fast Forward, or Audio Dubbing mode.

8 Fast Forward/Search Button (FF)

Push this button to forward the tape. When fully forward, the tape will stop automatically. This button is also used in the SLP PLAYBACK mode for TAPE SEARCH in the FORWARD direction.

9 Play Button (PLAY)

Push this button to play back a recorded tape.

10 Record Button (REC)

Push this button together with the Play Button (9) to start recording.

① Audio Dubbing Button (AUDIO DUB)

Push this button together with the Play Button 9 to record your own soundtrack on a previously recorded tape in place of the original soundtrack by using either a microphone or your own component audio system.

(2) Pause Button (PAUSE/STILL)

Push this button to temporarily stop the tape for avoiding recording unwanted materials of a program (the tape will not retract into the cassette) or to view a still-frame picture during playback. Push this button again to release the PAUSE/STILL mode.

Note:

You can view a still-frame picture only during playback of tape recorded in the SLP mode.

13 Frame Advance Button (FRAME ADV)

Push this button once to view pictures frame by frame. Pressing this button and holding it on you can view frame-by-frame slow motion pictures. These effects operate only when a still-frame picture appears on the screen.

14 Tape Counter/Reset Button (COUNTER)

Push the reset button to reset the tape counter to "0000" before starting the recording or playback. The counter indicates how far the tape has moved. It is very useful for locating the beginning of programs.

(15) Memory Switch (MEMORY)

Rewinds the tape to the point where you want to review.

16 Battery Meter (BATTERY)

Indicates the charging capacity of the battery pack of the recorder.

17 Power Switch (POWER)

Turns the recorder power on and off.

(18) Dew Indicator Lamp (DEW)

Lights up if excessive moisture condenses inside the recorder. The recorder WILL NOT operate at that time.

(19) Recording-Time Selector (SPEED)

Selects the speed of the tape for recording.

- SP: For a maximum recoding time of two hours with an NV-T120 video cassette.
- LP: For a maximum recording time of four hours with an NV-T120 video cassette.
- SLP: For a maximum recording time of six hours with an NV-T120 video cassette.

29 Camera Remote Switch

When the PK-751, PK-771 or PK-801 Color Cameras are used with the PV-4100 or PV-4500, you can remotely control the tape deck through the cameras 10 pin cable with the use of the PK-R70 optional accessory. Please see PK-R70 or PK-751, 771, 801 operational manual for more information.

SIDE of RECORDER

20 Audio Output Jack (AUDIO OUT)

For connection to a monitor TV or another Video Cassette Recorder.

21) Video Output Jack (VIDEO OUT)

For connection to a monitor TV or another Video Cassette Recorder. Not used with an ordinary TV set.

22 Video Input Jack (VIDEO IN)

For connection of another Video Cassette Recorder.

23 RF Output Connector (RF OUT)

This is the signal output connector from the builtin RF converter of the recorder.

24) Battery Compartment

Place the battery pack in this compartment.

25 DC Power Input Terminal

For connection of an external DC power source such as the AC adaptor, the tuner (optional), an auxiliary battery pack, or a car battery.

26 Microphone Input Jack (MIC)

For connection of microphone adaptor or audio input attenuator (included).
This is useful for recording and audio dubbing.

27 Tuner/Camera Input Terminal (TUNER/CAMERA) For connection of a portable video camera (optional) or the tuner (optional).

RF Converter Channel Selector (bottom) Set this selector to channel 3 or 4 whichever is unused in your area.

OPERATING COMPONENTS AND THEIR FUNCTIONS OF THE TUNER (Programmable)

TOP and FRONT

Channel-Locking Indicator Lamp (CH LOCK)
 Lights up to indicate that Channel-Lock is engaged.

2 Digital Clock

Displays the current time and the times at which unattended recording is to start and stop.

3 Charging Indicator Lamp (CHARGE)

Lights up while the battery pack of the recorder is being charged.

When charging has been completed, this lamp will go off. Charging will not occur during operation of the recorder therefore, this lamp will not light up when the recorder is ON.

4 Timer Controls

Permits setting the current time and unattended recording.

5 Channel-Locking Switch (CH LOCK)

Set this switch to ON so that your selected channels may not be changed by mistake during recording or unattended recording.

6 Automatic Fine Tuning Switch (AFT)

Locks on to signal to keep the picture clear at all times. Usually, set this switch to ON. When this switch is on and the cover of the Tuning Controls is opened the AFT is automatically OFF.

7 Automatic Fine Tuning Indicator Lamp (AFT) Lights up to indicate that Automatic Fine Tuning

is engaged.

8 UHF/VHF Tuning Controls

Open the cover and tune to any active channel in your area with the tuning control.

Channel Selector Buttons/Indicator Lamps

Push the desired channel selector buttons that you wish to view or record.

10 Power Switch (POWER)

Turns the tuner power on and off. When it is turned on, power is also supplied to the recorder.

The Digital Timer ② operates independently of this switch.

1) Timer Rec Switch (TIMER REC)

Set this switch to ON to start and stop the recorder automatically for unattended recording. When this switch is ON, the timer has control over the recorder.

12 Timer Rec Indicator Lamp

Lights up when the Timer Rec Switch (1) is on. When this lamp is ON, you CANNOT operate the unit manually.

13 TV/VTR Selector (TV/VTR)

Selects the signal to be viewed on your TV set.

TV: To watch TV as you normally would or to view another program while you are recording one program.

VTR: To play back a recorded tape or to see the picture you are recording on your TV set.

Notes:

- When the Power Switch (1) is set to its "OFF" position, the TV/VTR Selector Switch is automatically set to the "TV" position.
- If AC power cord of the tuner is taken of AC outlet plug, VHF program will not appear normally on TV screen.

14 VTR Indicator Lamp

Lights up when the TV/VTR Selector (3) is set in the VTR position.

REAR

- (15) UHF Antenna Output Terminals (UHF OUT)
 For connection to the UHF input of your TV set.
- (6) UHF Antenna Input Terminals (UHF IN) For connection of the UHF antenna.
- VHF Antenna Output Connector (VHF OUT)
 For connection to the VHF input of your TV set.
- (8) VHF Antenna Input Connector (VHF IN) For connection of the VHF antenna.

(19 RF Input Connector (RF IN)

For connection of the RF Output Connector of the recorder to receive the built-in RF converter's signal of the recorder.

20 AC Outlet

Convenience outlet for another appliance, such as a television, etc., 120 V AC and not more than 300 watts.

2) AC Power Cord

For connection to an ordinary power source.

22 DC Output Cable (DC OUT)

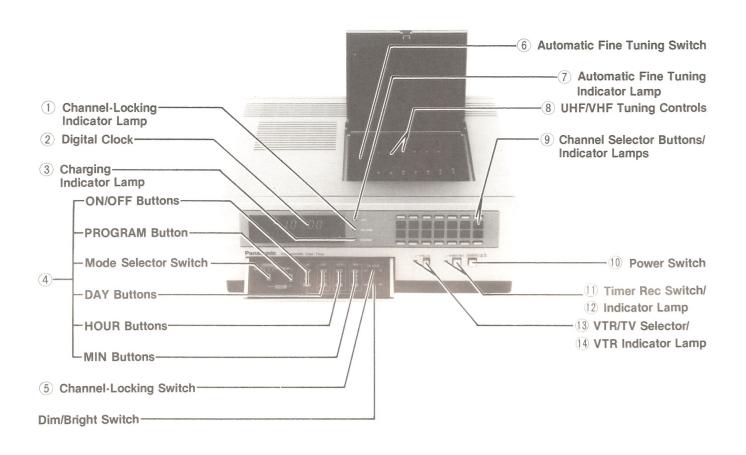
Connects to the DC Power Input Terminal of the recorder.

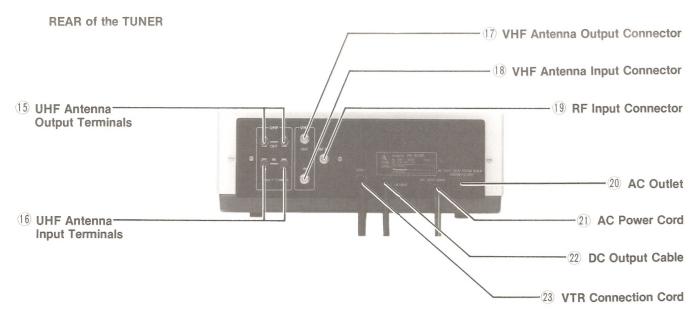
23 VTR Connection Cord (VTR)

Connects to the Tuner/Camera Input Terminal of the recorder.

CONTROLS AND COMPONENTS

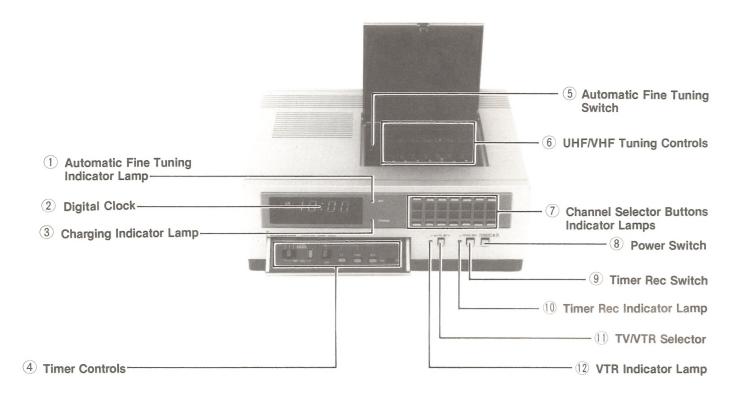
TOP and FRONT of the TUNER (Programmable)



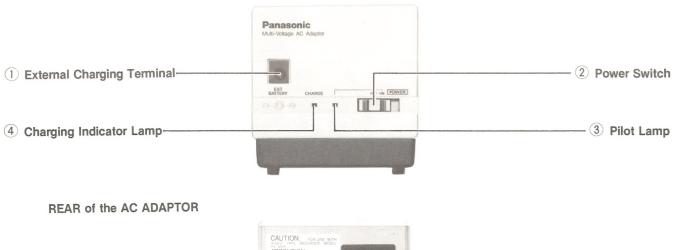


CONTROLS AND COMPONENTS

TOP and FRONT of the Tuner (1 EVENT)



FRONT of the AC ADAPTOR





OPERATING COMPONENTS AND THEIR FUNCTIONS

TOP and FRONT of TUNER (1 EVENT)

Automatic Fine Tuning Indicator Lamp (AFT)
 Lights up to indicate that Automatic Fine Tuning is engaged.

2 Digital Clock

Displays the current time and the times at which unattended recording is to start and stop.

③ Charging Indicator Lamp (CHARGE)

Lights up while the battery pack of the recorder is being charged, and goes off when charging is finished.

Charging will not occur during operation of the recorder, so this lamp will not light up.

4 Timer Controls

Permits setting the current time and unattended recording.

5 Automatic Fine Tuning Switch

Locks on to signal to keep the picture clear at all times.

Usually, set this switch to ON:

Even if the switch is on, the cover of the Tuning Controls is opened, the AFT is automatically OFF

6 UHF/VHF Tuning Controls

Open the cover and tune to any active channel in your area with the tuning control.

(7) Channel Selector Buttons/Indicator Lamps

Push the desired channel selector buttons that you wish to view or record.

8 Power Switch (POWER)

Turns the tuner power on and off.

When it is turned on, power is also supplied to the recorder.

The Digital Clock 2 operates independently of this switch.

9 Timer Rec Switch (TIMER REC)

Set this switch to ON to start and stop the recorder automatically for unattended recording. When this switch is ON, the timer has control over the recorder.

10 Timer Rec Indicator Lamp

Lights up when the Timer Rec Switch (9) is on. When this lamp is ON, you CANNOT operate the unit.

1 TV/VTR Selector (TV/VTR)

Selects the signal to be viewed on your TV set.

TV: To watch TV as you normally would or to view another program while you are recording one program.

VTR: To play back a recorded tape or to see the picture you are recording on your TV set.

12 VTR Indicator Lamp

Lights up when the TV/VTR Selector ① is set in the VTR position.

FRONT and REAR of AC ADAPTOR

1 External Charging Terminal

When the battery alone is being charged, connect the battery pack plug to this terminal.

2 Power Switch

Set to the "ON" position to turn power on. The Pilot Lamp (3) will light up.

3 Pilot Lamp

Lights up when the Power Switch 2 is turned on.

4 Charging Indicator Lamp

Lights up while the battery pack is being charged, and goes off when charging is finished.

5 Installing Bracket for the Antenna Selector

For installation of the accessory Antenna Selector.

6 DC Output Cable

This is the output cable for DC. Make connection to the DC power input terminal of the portable video recorder.

7 AC Power Cord

For connection to an ordinary power source.

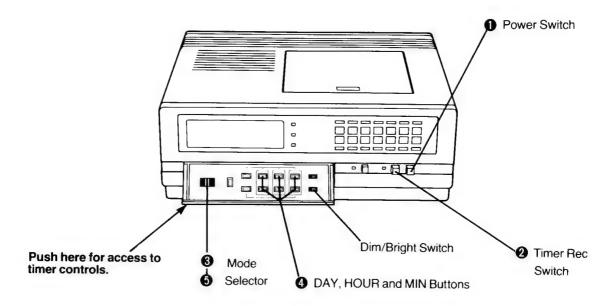
8 Voltage Selector

Allows you to select the AC voltage. (100, 120, 220 or 240 V).

CLOCK TIME ADJUSTMENT

The built-in digital clock/timer gives a constant readout of the time of day, and can be used for unattended recording. The clock is based on 12 hour indication of AM or PM. As long as the tuner is plugged in, the clock operates irrespective of power switch position, but when the unit is first plugged in, or if there is a power failure for more than 60 minutes, the clock indication "SUN AM 12 00" will flash on and off, when power resumes, to warn that the timer lost the preset time memory.

To set clock for present time of day



- 1 Turn the unit ON.
- Make sure that TIMER REC Switch is OFF.
- 3 Switch MODE SELECTOR to CLOCK.
- Set the clock by pushing FWD or REV of DAY, HOUR, MIN Buttons to be advanced by at least one minute over the present time. If buttons are kept depressed in consecutive motion, each indication will advance or turn back quickly. For example, if the present time is 10:14 and 20 accords AM on Sunday first act the

For example, if the present time is 10:14 and 20 seconds AM on Sunday, first set the clock for "SUN AM 10:15".

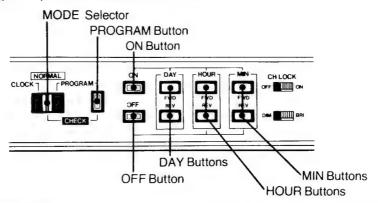
- When the time becomes 10:15 and 0 second AM, switch MODE SELECTOR to "NORMAL". The clock will start normal clock operation on 0 second.
 - (The seconds, however, are not displayed.)
 - The brightness of the clock display can be adjusted as desired by using Dim/Bright Switch.

- The battery back-up system retains the preset time memory for approximately 60 minutes in the event of a power failure.
- Plug the tuner into a live AC outlet and leave it uninterrupted for two days. This is the required time to charge the timer backup circuit completely. After this period of time the Programmable Time will have a 60 minute back-up in case of power failure.

SETTING THE TIMER FOR TIMER RECORDING

The timer permits unattended recording of up to 8 programs. It can be preset two weeks in advance to record your favorite TV programs. You can even automatically record every-day or every-week programs that are boradcast at the same time slot over the full-length of a cassette.

For timer recording the unit needs to know 1) what **DAY** to make a recording, 2) what **TIME TO START** and 3) **STOP** recording, and 4) a **CHANNEL** to be recorded.



To set the recording start/stop time:

Make sure that

- the clock indicates the present time correctly,
- POWER Switch is ON,
- -TIMER REC Switch is OFF.

Set the starting time as follows.

■ Switch MODE SELECTOR to "PROGRAM". The DAY, HOUR and MIN display will turn off, and Program Indicators 1, 2, 3, 4, 5, 6, 7 and "W" will appear on the display. The letter "W" stands for setting of a program that will repeat once every week.

Programs that were not previously set will indicate so by flashing on and off. Previously set programs will light up without flashing.

2 Push PROGRAM Button once.

Having switched Mode Selector to "PROGRAM", you can now proceed and push Program Button to determine the program number to be preset.

The Program Indicator selected will now light up. One second after the program number has been selected the ON indicator will flash on and off.

Push ON Button.

The "ON" indicator will stay illuminated and the current DAY and TIME will also light up as well as the symbol "I" meaning the 1st week.

Set up for the time and day you wish the recording to start by pressing DAY, HOUR and MIN Buttons.

Remember—the ON light now indicates start time of the program.

If a day in the second week is selected the symbol "II" will light up.

• Be sure to check the AM, PM indications.

Set the stop time as follows.

Push OFF Button.

"OFF" will light up and "ON" will go out. The display will continue showing its last time setting.

Set the stop time of recording by pressing HOUR. MIN. Buttons.

It is recommended to set the recording-stop time in excess of one minute over the stop time of a program.

If recording-start time is set up and no stop time is programmed, or the start time and the stop time are the same, this program will be cleared. Therefore, care should be taken that both start and stop times are always set up.

Select a channel to be recorded by pushing a desired channel button.

During programming, the desired preset channel will flash on and off and the currently viewed channel will light up. Should you select the channel being viewed for programming, it will not flash. When you fail to push a channel button, the current channel viewed will be preset.

8 Push PROGRAM Button to select the next program and repeat 3) ~ 7) for presetting the desired program.

After recording start time and stop time are preset, if ON Button is pushed again, the display will show the recording start time now selected. In this case, a change of the recording start time is possible. If no change is made, what is selected will now be memorized. Same remarks can be applied to the recording stop time.

Continued on next page.

When you finish programming, return MODE SELECTOR "NORMAL".

Now the clock displays the present time just as an ordinary digital clock.

 Even when Power Switch of the unit is turned off, the present time will be displayed, and the start and stop time for recording will be put on "MEMORY" by the timer unit.

To record a TV program at the same time every day: Programming for every-day recording can be made on any of program numbers 1—7.

- 1. Push PROGRAM Button.
- 2. Push ON Button.
- 3. Push REV of DAY Button.

All days of a week and the present time will light up. Symbols of 1st, 2nd week will not be displayed.

- **4.** Set up the starting/stop time of recording by pressing **HOUR, MIN** Buttons as shown on the preceding page.
 - Be sure to push the desired preset channel.

To record a TV program at the same time every week:

- 1. Press PROGRAM Button until "W" lights up.
- 2. Follow the same steps ③—⑦ on the preceding page to set up the starting/stop time of recording.

Symbols of 1st, 2nd week will not light up.

- Be sure to push the desired preset channel.
- 3. After setting the time, return MODE SELECTOR to "NORMAL".

Note that every-day and every-week recordings will continue over the full-lenth of a cassette as long as TIMER REC Switch is set ON.

OVERLAPPING

When one program overlaps another program, the program indicator of the overlapped portion will flash on and off one second after the stop time is set. If overlapping should occur the program must be reset.

TO CHECK PROGRAMMING

Make sure that Mode Selector is set to "NORMAL" and Power Switch is ON.

Push **PROGRAM** Button and select the Program Number that you wish to check.

The ON of the display portion will light up and the starting time, DAY, HOUR and MIN will light up for 4 seconds.

Four seconds later...

The "ON" indicator will go out and the "OFF" indicator will light up. The stop time will then be displayed for 4 seconds.

 The preset channel will flalsh during checking. If the preset channel is the same channel that is selected, the lamp will light without flashing.

The display will then resume the normal time. in this mode, if PROGRAM Button is pushed again within 6 seconds, the next program number to the previous checked program will light up, and the checking process will carry on.

- You can check the program when TIMER REC Switch is ON, without regard to the position of Mode Selector.
- When one program overlaps another program, the program number of the overlapped portion will flash on and off. If overlapping should occur the program must be reset.

TO CLEAR PROGRAM

Make sure that Power Switch ON and that Timer Rec Switch is OFF.

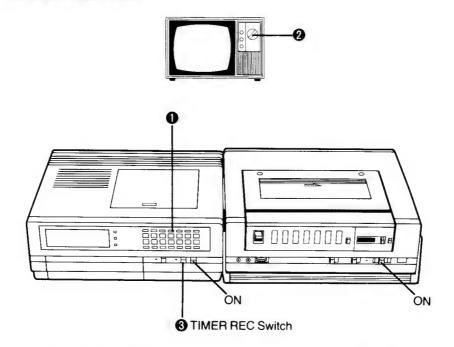
- 1. Switch MODE SELECTOR to "PROGRAM".
- 2. Press **PROGRAM** Button until the program number that you wish to clear will appear.
- 3. Push ON Button.

The present time will light up, but the recording start/stop time of the program is cleared.

Or, if you wish to clear a program while setting recording start time, push ON and OFF Buttons.

4. Return **MODE SELECTOR** to "**NORMAL**" after clearing.

TIMER RECORDING



Prepare for timer recording as follows:

- Turn TV on and select channel 3 or 4.
- Insert a cassette. Make sure that the tab is in place on it.
- Reset Tape Counter to "0000".
- Turn on the tuner and the recorder.
- Set Tape-Speed Selector to "SP", "LP", or "SLP".
- Set Camera Remote Switch to "OFF".
- Set VTR/TV Selector to "VTR".
- Set Timer Rec Switch to "OFF".
- Select a channel to be recorded and confirm the proper reception on TV.
- 2 Turn TV OFF.
- 3 Set TIMER REC Switch ON.

The TIMER REC lamp lights up and recording will start and stop automatically at the preset start/stop times. If the tape ends during the recording, the unit will stop and retract the tape into the cassette.

- When TIMÉR REC Switch is on, you cannot operate the unit manually but you can eject the tape.
- If the cassette's tab is missing. TIMER REC lamp will not light up and no recording will start.
- When the start time to record comes up:
 The number of the preset program and the lamp of the preset channel will light up, and recording will start.

 Your selected channel may not be changed by mistake during recording.

 When the stop time of recording comes up:

The number of the preset program and the lamp of the preset channel will go out, the recording will be stopped.

At this stage, if other programs are preset, the TIMER REC lamp will stay on and in accordance with the order of the priority, the recording of the next program will start.

- If the tape reaches its end, the unit will stop and retract the tape into the cassette.
- To stop the recording push TIMER REC Switch off.
- Plug the tuner into a live AC outlet for two days (without power interruption) and the required time to charge completely the timer back-up circuit is then provided. After this period of time the Programmable Time will have a 60 minute back-up in case of power failure.
- Timer recording will not be performed or continued if a power interruption for more than 60 minutes occurs before or during recording, even if power resumes thereafter.
- Every-day and every-week recording will continue over the full-length of a cassette for as long as Timer Rec Switch is on.

VHS-PRINCIPLE OF OPERATION

Basic Video Tape Recording

To understand the VHS format, it is wise to first review the basic principles of video tape recording.

Like audio tape recording, video information is stored on magnetic tape by means of a small electromagnet, or head. The two poles of the head are brought very close together but they do not touch. This creates magnetic flux to extend across the separation (gap), as shown: Fig. 1.

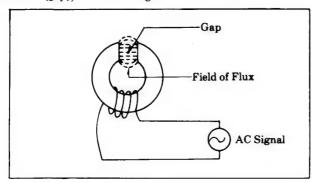


Fig. 1.

If an AC signal is applied to the coil of the head, the field of flux will expand and collapse according to the rise and fall of the AC signal.

When the AC signal reverses polarity, the field of flux will be oriented in the opposite direction and will also expand and collapse.

This changing field of flux is what accomplishes the magnetic recording. If this flux is brought near a magnetic material, it will become magnetized according to the intensity and orientation of the field of flux. The magnetic material used is oxide coated (magnetic) tape.

Using audio tape recording as an example, if the tape is not moved across the head, just one spot on the tape will be magnetized and will be continually re-magnetized. If the tape is moved across the tape, specific areas of the tape will be magnetized according to the field of flux at any specific moment. A length of recorded tape will therefore have on it areas of magnetization representing the direction and intensity of the field of flux. For instance:

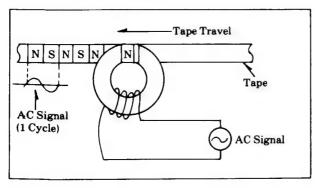


Fig. 2.

The tape will have differently magnetized regions, which can be called North (N) and South (S), according to the AC signal. When the polarity of the AC signal changes, so does the direction of magnetization on the tape, as shown by one cycle on the AC signal (see Fig. 2). If the recorded tape is then moved past a head whose coil is connected to an amplifier, the regions of magnetization on the tape will set up flux across the head gap which will in turn induce a voltage in the coil to be amplified. The output of the amplifier, then is the same as the original AC signal. This is essentially what is done in audio recording, with other methods for improvement like bias and equalization.

There are some inherent limitations in the tape recording process which do effect video tape recording, so they will be examined now.

As shown in Fig. 2, the tape has North and South magnetic fields which change according to the polarity of the AC signal. What if the frequency of the AC signal were to greatly increase?

If the speed of the tape past the head (head to tape speed) is kept the same, the changing polarity of the high frequency AC signal would not be faithfully recorded on the tape, as shown in Fig. 3.

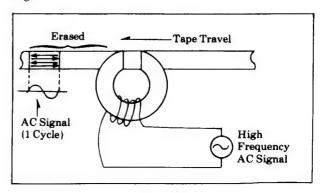


Fig. 3.

As the high frequency AC signal starts to go positive, the tape will start to be magnetized in one direction. But the AC signal will very quickly change its polarity, and this will be recorded on much of THE SAME PORTION of the tape, so North magnetic regions will be covered by South magnetic regions and vice versa. This results in zero signal on the tape, or self-erasing. To keep the North and Sough regions separate, the head to tape speed must be increased. (See Fig. 3.)

When recording video, frequencies in excess of 4 MHz may be encountered. Through experience, it is found that the head to tape speed must be in the region of 10 meters per second in order to record video signals.

The figure of 10 meters per second was also influenced by the size of the head gap. Clearly, the lower the head to tape speed, the easier it is to control that speed. If changes in head gap size were not made, the necessary head to tape speed would have been considerably higher. How the gap size influences this can be explained by Fig. 4.

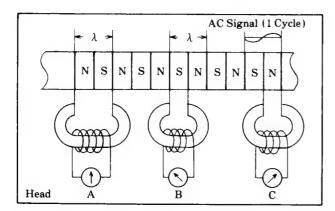


Fig. 4.

Assume a signal is already recorded on the tape. The distance on the tape required to record one full AC signal cycle is called the RECORDED WAVELENGTH or λ . Head A has a gap width equal to λ . Here, there is both North and South oriented magnetization across the gap.

This produces a net output of zero since North and South cancel. Head B and C have a maximum output because there is just one magnetic orientation across their gaps.

Maximum output occurs in heads B and C therefore, because their gap width is $1/2\lambda$. (Heads B and C would also work if their gap width is less than $1/2\lambda$.) The same is also true for recording. The maximum useable (no self-erasing) transfer of magnetic energy to the tape occurs when the gap width, G, can be expressed as.

$$G \leq \frac{\lambda}{2}$$

The RECORDING WAVELENGTH, can be expressed as:

 $\lambda = \frac{V}{f}$ where V is the head to tape speed and f is the frequencies to be recorded.

So, $G \subseteq \frac{V}{2f}$, as V increases, G is also allowed to increase for the same MAXIMUM frequency. Conversely if G is made very small, V is allowed to be reduced.

In practice, G can be made as small as (and smaller than) 1μ m (1 X 10^{-6} meters) and this puts V in the area of 10 meters per second.

A head to tape speed of 10 meters per second is a very high speed, too high in fact to be handled accurately by a reel to reel tape machine of reasonable size. Also, tape consumption on a high speed reel to reel machine is tremendous.

The method employed in video recording is to move the video heads as well as the tape. If the heads are made to move fast, across the tape, the linear tape speed can be kept very low.

In 2-head helical video recording (the only format which will be discussed here) the video heads are mounted in a rotating drum or cylinder, and the tape is wrapped around the cylinder. This way, the heads can scan the tape as it moves. When a head scans the tape, it is said to have made a TRACK. This can be seen in Fig. 5.

In 2-head helical format, each head, as it scans across the tape will record one TV field, or 262.5 horizontal lines. Therefore, each head must scan the tape 30 times per second to give a field rate of 60 fields per second.

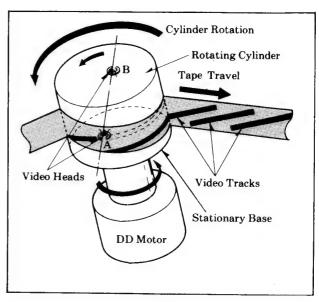


Fig. 5.

The tape is shown as a screen wrapped around the head cylinder to make it easy to see the video head. There is a second video head 180° from the head shown in front. Because the wraps around the cylinder in the shape of a helix (helica) the video tracks are made as a series of slanted lines. Of course, the tracks are invisible, but it is easier to visualize them as line. The two heads "A" and "B" make alternate scans of the tape.

An enlarged view of the Video tracks on the tape can be shown: Fig. 6

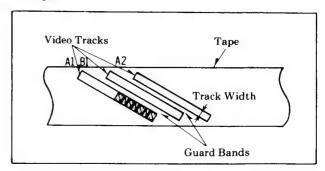


Fig. 6.

Refer to Fig. 6. The video tracks are the areas of the tape where video recording actually takes place. The guard bands are blank areas between tracks, preventing the adjacent track's crosstalk from appearing on the track where the video head is tracking.

There is one more point about video recording which will be discussed here. Magnetic heads have the characteristic of increased output level as the frequency increases. Then, as determined by the gap width, the maximum output occurs at

approximately
$$G = \frac{V}{2f}$$

In practice, the lower frequency output of the heads is boosted in level to equal the level of the higher frequencies. This process, as also used in audio applications, is called equalization.

Video frequencies span from DC to about 4 MHz. This represents a frequency range of about 18 octaves. 18 octaves is too far a spread to be handled in one system (one machine). For instance, heads designed for operation at a maximum frequency of 4 MHz will have very low output at low frequencies. Since there is 6 dB/octave attenuation, 18x6=108 dB difference appears. In practice this difference is too great to be adequately equalized. To get around this, the video signal is applied to an FM modulator during recording. This modulator will change its frequency according to the instantaneous level of the video signal.

The energy of the FM signal lies chiefly in the area from about 1 MHz to 8 MHz, just three octaves. Heads designed for use at 8 MHz can still be used at 1MHz, because the output signal can be equalized. Actually speaking, heads are designed for use up to about 5 MHz. Therefore, some FM energy is lacked but it does not affect the playback video signal, because it is resumed in the playback process.

Upon playback, the recovered FM signal must be equalized then demodulated to obtain the video signal.

CONVERTED SUBCARRIER DIRECT RECORDING METHOD

The one method of color video recording that will be discussed here is the converted subcarrier method. In order to avoid visible beats in the picture caused by the interaction of the color (chrominance) and brightness (luminance) signals, the first step in the converted subcarrier method is to separate the chrominance and luminance portions of the video signal to be recorded. The luminance signal, containing frequencies from DC to about 4 MHz, is then FM recorded, as previously described. The chrominance portion, containing frequencies in the area of 3.58 MHz is down-converted in frequency in the area of 629 kHz. Since there is not a large shift from the center frequency of 629 kHz, this converted chrominance signal is able to be recorded directly on the tape. Also note that the frequencies in the area of 629 kHz are still high enough to allow equalized playback. In practice, the CONVERTED CHROMINANCE signal and the FM signals are mixed and then simultaneously applied to the tape. Upon playback, the FM and converted chrominance signals are separated. The FM is demodulated into a luminance signal again. The converted chrominance signal is reconverted back up in frequency area of 3.58 MHz. The chrominance and luminance signals are combined which reproduces the original video signal.

1. VIDEO HEAD

A. The Need for New Video Heads

We have already discussed the reduced track width. This reduction requires the use of a smaller video head. Just making them smaller does not make them better. With less of actual head material to work with, the magnetic properties of the head suffers. To offset this a change in the head material is in order. Because the VHS recorder is designed to be small, a reduction in the size of the head cylinder was called for.

A reduction in the size (diameter) of the head cylinder changes the head to tape speed. Remember, the head to tape speed affects the high frequency recording capability of the head.

To offset this problem, the head gap size was reduced. As is well-known. Azimuth Recording is utilized in VHS. The heart of the Azimuth Recording process is in the video heads themselves. This requires still another change in head design.

B. Hot Pressed Ferrite

The use of Hot Pressed Ferrite as video head material in VHS helps to improve the characteristics of the smaller head. The Hot Pressed Ferrite also has uniform domain orientation which further improves the head characteristics. It has been proven in many tests that the use of Hot Pressed Ferrite produces a superior video head.

C. Head Gap

1. Width

As explained, the need for smaller head gap size became apparent. In VHS, the video heads have gap widths of a mere $0.3\mu m$ ($0.3x10^{-6}$ meters).

This is quite a contrast with ordinary video heads used in other helical applications whose gap widths are typically in the area of $1\mu m$.

2. Azimuth

Azimuth is the term used to define the left to right tilt of the gap if the head could be viewed straight on. In previous VTR applications the azimuth was always set to be perpendicular to the direction of the head travel across the tape, or more simply, the video track. Fig. 7 helps explain this.

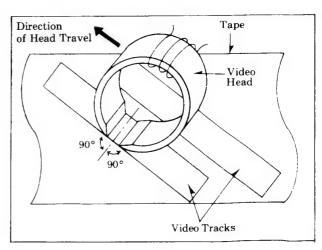


Fig. 7.

Fig. 7 shows that the gap is perpendicular to (90°) the head's movement across the tape. We can think of this standard as a perfect azimuth of 0° .

In VHS, the video heads have a gap azimuth other than 0°. And more, one head has a different azimuth from the other. The 2 values used in VHS are azimuth of +6° and -6°. Refer to Fig. 8 and Fig. 9.

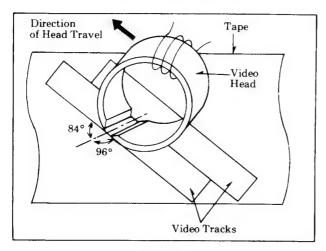


Fig. 8.

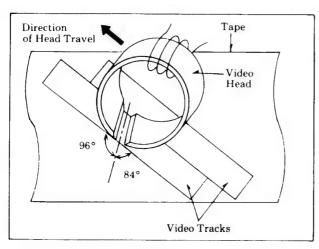


Fig. 9.

These heads make the VHS format different from most other VTR formats. Exactly how the azimuths of $\pm 6^{\circ}$ helps to keep out adjacent track interference is explained next.

2. AZIMUTH RECORDING

Azimuth Recording is used in VHS to eliminate the interference or crosstalk picked up by a video head. Again, because adjacent video tracks touch, or crosstalk, a video head when scanning a track will pick up some information from the adjacent track. The azimuths of the head gaps assure that video head "A" will only give an output when scanning across a track made by head "A". Head "B", therefore, only gives an output when scanning across a track made by head "B". Because of the azimuth effect, a particular video head will not pick up any crosstalk from an adjacent track. Let's examine this more closely.

In Fig. 10, we can see the PV-4000 portable VHS/SLP for example, video tracks with not-to-scale North and South magnetized regions on them.

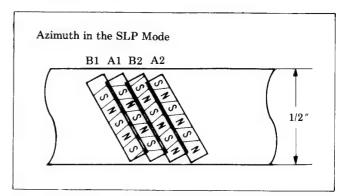


Fig. 10.

It can also be seen that these N or S regions are not perpendicular to the track, they have -6° azimuth in tracks A1, A2; and +6° azimuth in tracks B1, B2.

If we take track A1 and darken the N regions, it becomes easier to see. Refer to Fig. 11.

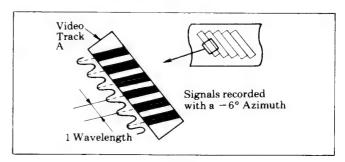


Fig. 11.

In Fig. 12, we see the information on track A, made by head "A". Imagine now that head "A" is going to playback this track, by superimposing the head over the track. Clearly, the gap fits exactly over the N and S regions, so that at any moment there is either an N region or an S region or an N to S (or S to N) transition across the gap. This produces maximum output in head 'A'. Now, visually superimpose the "B" head over the track.

Here there are N and S regions across the gap at the same time, at any given moment. Remember that simultaneous N and S regions across the gap cause cancellation, and therefore no output. Looking at Fig. 9, we can see that the gap width is equal to 1/2 the recorded wavelength. Recall that this occurs at the highest frequency which is to be recorded.

So therefore, the azimuth effect works at these high frequencies.

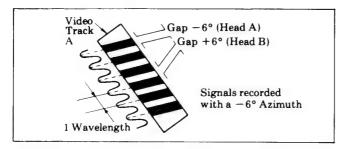


Fig. 12.

But what happens at lower frequencies? In Fig. 13, we see a diagram similar to Fig. 12, except the recorded wavelength is longer, which represents a lower frequency.

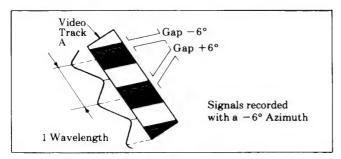


Fig. 13.

Again, visually superimpose the heads over the track. Head "A" is the same as before. But look at head "B". There is much less cancellation across the gap, and its output is close to that of head "A". Therefore, we see where the azimuth effect is dependent on frequency. The higher the frequency, the better the azimuth effect. The lower the frequency, the lower the separation by azimuth effect.

3. VHS COLOR RECORDING SYSTEM

Because there is insignificant azimuth effect at lower frequencies, a new color recording system must be adopted. The fact that crosstalk occurs at lower frequencies cannot be changed, this happens right at the tape during playback. The method adopted processes the crosstalk component signals from the heads so that they are eliminated. It is important to realize that the crosstalk DOES STILL OCCUR. It is the recording/playback circuitry that performs the elimination.

In ordinary Helical VTR's using converted subcarrier direct recording, the phase of the chrominance signal is untouched, recorded directly onto the tape. The chrominance signal and its phase can be represented by vectors. Vectors graphically represent the amplitude and phase of ONE frequency. In this discussion, we will consider (for simplicity) the chrominance signal to be of one frequency. As an example of vectors, see Fig. 14.

The length of any vector represents its amplitude.

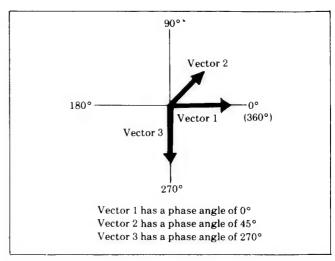


Fig. 14.

We know that the azimuth effect will not work at the lower frequencies. And since the color information in VHS is recorded at low-converted frequencies, a new method of color recording was adopted.

Vector Rotation in Recording is actually a phase shift process that occurs at a horizontal rate, 15,734Hz.

The chrominance signal can be represented by a vector, showing amplitude and phase. (\spadesuit)

In ordinary Helical Scan VTR's the vector is of the same phase for every horizontal line, on every track as shown in Fig. 15.

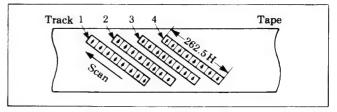


Fig. 15.

In VHS, we still convert the 3.58 MHz down to a lower frequency, namely 629 kHz, but the new color method used in VHS format is a process of vector rotation. During recording the CHROMINANCE phase of each horizontal line is shifted by 90°.

For head "A" (CHANNEL 1) we ADVANCE the CHROMINANCE phase by 90° per horizontal line (H).

For head "B" (CHANNEL 2) we DELAY the chrominance phase 90° per H.

VECTOR (PHASE) ROTATION:

CHANNEL 1 $+90^{\circ}/H$ CHANNEL 2 $-90^{\circ}/H$

Fig. 16 shows what this looks like on tape.

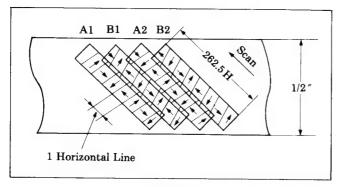


Fig. 16.

Now assume that head "A" plays back over track A1 it will produce a vector output as such:

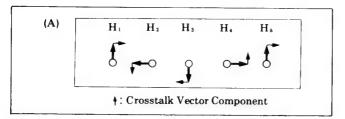


Fig. 17.

Head "A" when tracking over A1 will have an output consisting of the main signal (large vectors) and some crosstalk components (small vectors).

Fig. 17, then is a vector representation of the playback chrominance signal from the head.

One of the most important things down in the playback process is the restoration of the vectors to their original phase. This is done by the balanced modulator in the playback process.

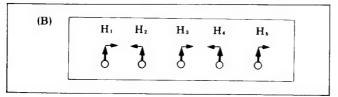


Fig. 18.

This restored signal is then split 2 ways. One path goes to one input of an adder. The other path goes to a delay line which delays the signal by 1 H. The output of the delay line goes to the other input of the adder. Fig. 19 explains.

As can be seen in Fig. 21, the crosstalk component has been eliminated after the first H line. We have now a chrominance signal free of adjacent channel crosstalk.

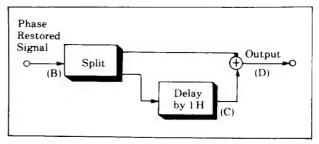


Fig. 19.

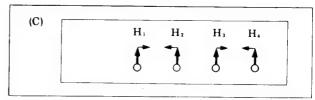


Fig. 20.

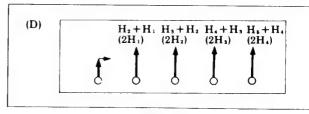


Fig. 21.

The double output in Fig. 21 is not a problem because it can always be reduced. The process of adding a delayed line to an undelayed line is permissable because any 2 adjacent lines in a field contain nearly the same chrominance information.

So, if 2 adjacent lines are added, the net result will produce no distortion in the playback picture.

In conjunction with the crosstalk elimination is the reconversion of the chrominance 629 kHz to its original 3.58 MHz. Now the color signal is totally restored.

General Introduction to Portable VHS Format and New Technical Features

The Panasonic Portable VHS models PV-4100/4500 Video Cassette Recorders [PV-4100 consists of PV-4000 (portable deck) and PV-A40 (AC adaptor) and PV-4500 consists of PV-4000 (portable deck) and PV-A35P (8 program timer electronic tuner unit)] were designed to give the user the capability to record up to 6 hours in length on a single NV-T120 tape.

But because there are other VHS recorders/players available which are not able to make 6 hour recordings, it is desirable to make the Panasonic PV-4100/4500 capable of playing back not only its own 6 hour tapes, but also the tapes made by these other VHS units. This makes the PV-4100/4500 compatible with all other existing VHS units.

In addition to the 6 hour recording capability, there are many special functions applied to the PV-4100/4500 portable VHS.

1. STILL MODE PLAYBACK (SLP mode)

In order to achieve almost noiseless playback pictures in the STILL mode, the widths of video heads in the PV-4000 Video deck are slightly altered with respect to its predecessor SP/LP/SLP switchable models except the PV-1650. Classification of video head widths for SP/LP/SLP models is as follows.

Model	Porduct	Video Head Width		
PV-2600 PV-1200 PV-1600 PV-1400	Portable VHS Standard VHS Programmable VHS Cue/Review VHS with Programmable Timer Cue/Review VHS	Head A	Head B	
PV-1650 PV-1750	with Single Timer 4 Head VHS	SP-70 μ LP/SLP-26 μ	90 μ 31 μ	
PV-3000 PV-4000	Portable VHS with a Still Function New Portable VHS with Still and Search Functions	26μ	31 μ	

The video heads in PV-4000 measure as follows.

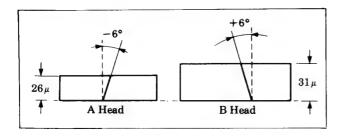
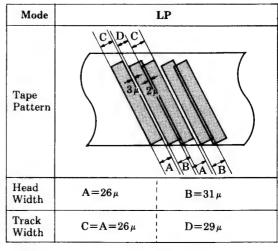


Fig. 22.

When recordings are made, each head writes its own distinctive azimuth pattern on the tape corresponding to a single field (1/60 sec). Since during this time, the lateral movement of the tape is 58μ -SP, 29μ -LP and 19.3μ -SLP, the succeeding video head records a pattern partially over the previously recorded pattern in the LP or SLP modes which was recorded 1/60 sec prior to this.

Mode		SP
Tape Pattern	32 A	27 _B
Head Width	$A=26 \mu$	B=31 μ
Track Width	C=A=26μ	D=B=31μ



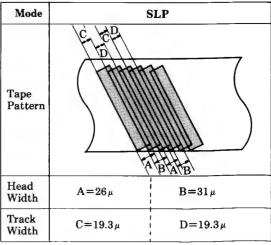
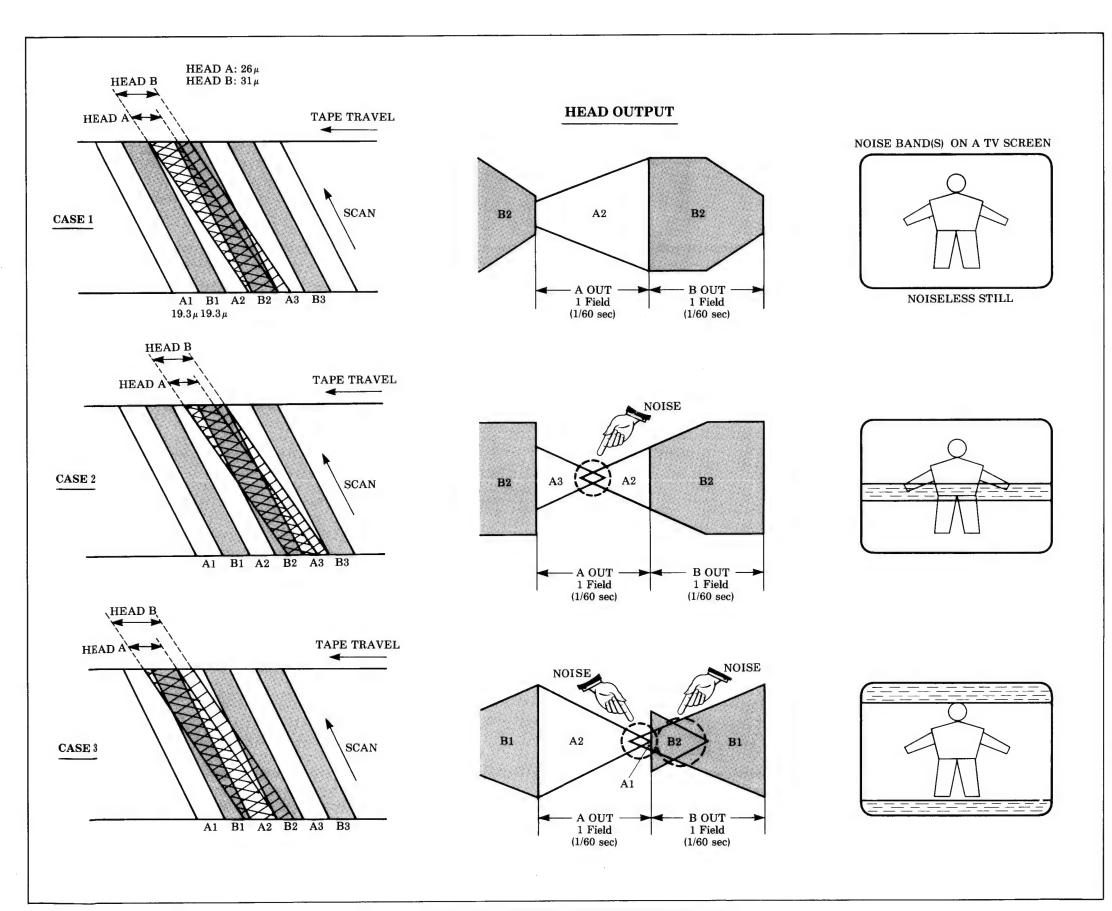


Fig. 23.



Since the PV-4000 was designed to reproduce fine still pictures in the SLP mode, let's consider how the STILL MODE PLAYBACK is performed relationship between tape format and noise band(s) on a TV are shown in Fig. 24.

CASE 1 in Fig. 24 shows the still mode picture produced on the PV-4000 when optimum head/tape path alignment has been achieved. Therefore in order to achieve almost no noise in the picture in any condition, the noise bands must be moved into the blanking portion.

Since vertical jitter may appear if noise bands stay in the blanking portion, inside the VTR in the still mode, artificial V sync pulses are made and inserted into the outgoing video in order to reliable lock the monitor vertically.

CASE 2 when we stop the tape in the pause mode a misalignment of video track and video head can occur. But in the PV-4000 deck we slightly move the capstan, which will move the tape.

This aligns the video tape to match the video heads path and move any noise into the blanking area.

CASE 3 would be the worst case, but as in CASE 2 the capstan will be slightly moved, which will align the tape and video heads and move any noise into the blanking area.

Fig. 24 STILL PICTURE & NOISE BAND(S) (SLP mode)

2. SEARCH FUNCTION: CUE AND REVIEW

This function allows you to view the video picture while playing back the tape at 5 to 9 times normal SLP speed (See Fig. 25). The video can also be seen in the CUE & REVIEW SP and LP modes.

But the video picture is poor because the VCR operates only in the SLP speed in the CUE and REVIEW modes.

Tape	Beginning of T-120 Tape		End of T	-120 Tape
Mode	Cue	Review	Cue	Review
SP	×1.3	×3.3	×3.3	×1.3
LP	×2.7	×6.7	×6.7	×2.7
SLP	×5	×9	×9	×5

Fig. 25. Approximate Tape Speed: in Cue & Review

This new feature is accomplished by the use of a new capstan motor and drive system (see Fig. 26).

The new capstan system has a higher torque and can drive the take-up or supply reels at a higher speed.

Normally the speed will vary from 5 to 9 times normal speed depending on the amount of video tape on the reels. There will be bars in the picture and the number will change according to the speed and direction of the video tape. Also the sound is muted in the CUR and REVIEW modes.

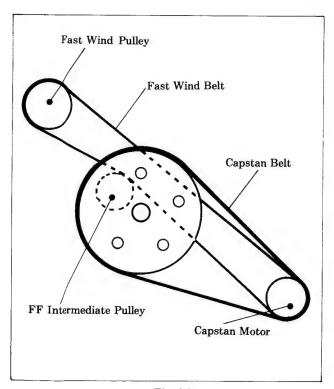


Fig. 26.

3. NEW CAPSTAN MOTOR

A new capstan motor has been installed so that CUE and REVIEW functions can be preformed. The new capstan motor basically has more windings, so that we can develope a higher torque that is required by the CUE and REVIEW functions.

Also a large flywheel has been added to reduce wow & flutter

The capstan motor is also over current or current limited (580 mA) protected.

This is required due to the fact that if the tape should jam, we can shut down the VCR and protect the capstan motor from burn out.

If the capstan motor stops, after 3 seconds the hall IC sensor will shut down the VCR off.

4. NEW INFRARED PHOTO SENSOR LED

A new infrared photo sensor LED is used in the PV-4000 portable deck for longer life and lower power consumption. The infrared photo sensor also flashes 0.2 sec on and 1.8 sec off to conserve power even though you can not see it.

5. SHORT FAST FORWARD FUNCTION

At each end of the video cassette tape there is a translucent leader. When the take-up photo transistor senses the infrared light from the photo sensor LED the VCR will go into a short fast forward mode. For example, rewind end, review end, or if a overly rewound tape is installed into the VCR. The microcomputer will order the VCR to go into the short FF mode until the photo transistor senses video tape. This is done to protect the video heads and tape, by preventing the video heads contacting the splice between the translucent tape and video tape.

6. POWER SW AUTOMATIC SHUT OFF

The PV-4000 portable deck has a new automatic shut off switch.

For example, if the cylinder servo does not lock up properly. The deck's power switch will automatically shut off. Dew sensor activation or a low battery (under cut 10.3V) will also shut off the deck's power off automatically.

7. PAUSE RESET

When the PV-4000 portable deck is placed into the pause mode, the microcomputer will, after 5 minutes order the capstan motor to move the tape slightly to prevent damage to the video tape or heads.

8. MODE SELECT SWITCH

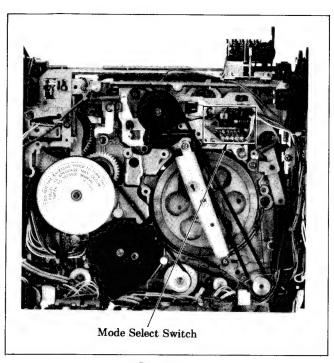


Fig. 27.

Functional construction of mode select switch is as follows.

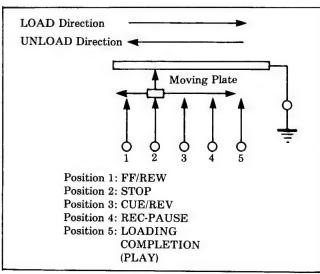


Fig. 28.

One of above positions is selected with regard to loading motor rotation.

Position 1: FF/REW

When the FF or REW key is pressed, the loading motor rotates in the UNLOAD direction. After the small moving plate contacts Position 1 terminal, FF or REW operation will start.

Position 2: STOP

When the STOP key is pressed, the loading motor rotates as follows.

from FF/REW to STOP: LOADING direction from REC PAUSE to STOP: UNLOAD direction from PLAY (or REC PLAY) to STOP:

UNLOAD direction

When the moving plate contacts Position 2 terminal, the unit will STOP.

Position 3: CUE/REVIEW

When the CUE or REVIEW key is pressed during playback, the loading motor rotates in the UN-LOAD direction. The loading motor continues to rotate until the small plate contacts position 3 terminal and the CUE or REV. operation will start.

Position 4: REC PAUSE

When the PAUSE key is pressed during record, the loading motor rotates in the UNLOAD direction. At the same time, SHORT REWIND will start, which lasts for 1.2 seconds.

The loading motor continues to rotate until the small plate contacts Position 4 terminal.

Position 5: PLAY (REC PLAY)

When the PLAY key (or REC/PLAY keys) is pressed, the loading motor rotates in the LOAD direction. After the small plate contacts Position 5 terminal, PLAY (or REC PLAY) operation will start.

9. ADD-ON RECORD

As was described briefly in the previous item 8 MODE SELECT SWITCH, when the PAUSE key is pressed during record, SHORT REWIND operation is performed for 1.2 seconds and then the unit is waiting for the next hit of PAUSE key. Sequence of add-on record is as follows.

- 1. Pause key is pressed during record.
- 2. Moving plate of Mode Select Switch will moves to REC PAUSE Position (from Position 5 to Position 4).
- 3. Short Rewind will start.
- 4. Moving plate contacts REC PAUSE Position terminal. (Position 4)
- 5. The unit is now in the REC PAUSE mode.
- 6. Pause key is pressed again to release Pause.
- 7. Short playback is performed for synchronization between playback control pulse and capstan PG signals (Approx. 0.7 seconds).
- 8. Add-on record starts.

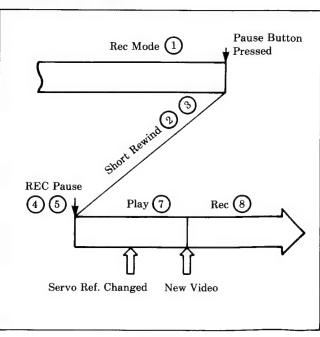


Fig. 29.

1---

GLOSSARY OF TERMS

ACC

Automatic Color Control used to maintain an overall constant color signal level in the color circuits.

ACK

Automatic Color Killer.

Adjacent Track

This is the name of the video track to the immediate left or right of the track of concern.

AFC

Automatic Frequency Control used to phase-lock the color circuits to either the recording or playback color signal, in order to achieve a stable color signal.

AFT

Automatic Fine Turning...This is a special circuit found in most recent TV sets which makes the local oscillator of the TV tuner follow the channel of concern in order to produce a stable IF frequency. In other words, if for any reason the TV station being received changes frequency, the AFT circuit will automatically compensate so that no interference will be seen on the screen, i.e., no manual fine turning is necessary.

AGC

Automatic Gain Control used to maintain an overall constant picture level in the luminance circuits.

APC

Automatic Phase Control used to help phase lock the color circuits to either the recording or playback color signal in order to achieve a stable color signal.

Azimuth

A term used to describe the left to right tilt of the gap of a recording head, if it could be viewed straight on.

Balanced Modulator

A circuit so designed to give as an output the frequency sum or frequency difference of its two input signals. Any special characteristics of one of the input signals will be present in the output signal.

Reats

A term used to described the unwanted signals produced when two original signals are allowed to be mixed together.

Bipolar PG

Pulse Generator signals that have both positive and negative excursions.

Burst

A short time occurence (8 to 10 cycles) of the 3.58 MHz subcarrier signal, appearing right after horizontal sync but centered on the blanking portion of the video waveform. Burst is used to keep the color oscillator of a TV receiver locked to the broadcast station.

B/W

Abbreviation for Black and White.

C

Capacitor.

C Signal

The color portion of a video signal.

Capstan

A small rotating metal dowel which drives the recording tape to assure positive tape movement.

Chroma

The color portion of a video signal.

Chrominance

The color portion of a video signal.

Clamp

The process of giving an AC signal a specific DC level.

Control Signal

A special signal recorded onto the video tape which is used during playback as a reference for the servo circuits.

Converted Subcarrier

This is the process of frequency shifting the color 3.58 MHz subcarrier and its sidebands down to 629 kHz.

Crosstalk

The name given to the unwanted signals obtained when a video head picks up information from an adjacent track.

CUE

To scan the playback picture at a faster than normal speed in the Forward direction.

Due

Diode.

DL

Delay Line.

DDC

Direct Drive Cylinder...as used in VHS, this means that the video heads are driven by a self-contained brushless DC motor using no belts or gears. DD cylinders produce pictures with better stability.

Dark Clip

After emphasis, the negative going spikes (undershoot) of a video signal may be too large in amplitude for safe FM modulation. A dark clip circuit is used to cut off these spikes at an adjustable level.

Delta Factor (Δf)

A term used to indicate that a playback signal off the video tape has some jitter or "wow and flutter". Δf , or "a change in frequency" means that the color signal off the tape is not a stable frequency of 629 kHz, but rather a signal whose frequency at any instant is some small amount above or below 629 kHz.

Deviation

A term used to describe how far the FM carrier swings when it is modulated. In VHS the upper limit is 4.4 MHz.

Dew Detector

A variable resistor whose resistance value depends upon the ambient humidity,

Dihedral

A term used to describe the relative position between the two video heads as they are mounted in the head cylinder. Perfect dihedral means that the tips of the heads are exactly 180° apart.

Dropout

A momentary absence of FM or color signal off the tape, whether due to uneven oxide or a coating of dust on the tape or video heads.

Duty Cycle

In describing a rectangular waveform, the "duty" refers to the percentage of off time and on time for one complete cycle. 50-50 means that there are equal periods of off time and on time for one cycle and this would be a square wave.

E-E

Electronics to Electronics...this is the picture viewed on the TV set when a recording is being made. This picture goes through some but not all of the circuits of the recorder and is used to test the operation of said circuits.

EQ

Shortened form of "Equalization", used in the audio circuits.

Emphasis

The process of boosting the level of the high frequency portions of the video signal,

FG

Frequency Generator used in the servo circuits.

FL

Filter.

FM Signal

The luminance portion of the video signal is used to control the frequency of astable multivibrator. The output of this multivibrator is a frequency modulated (FM) signal shifting from 3.4 MHz to 4.4 MHz (puls sidebands).

Field

One half of a television picture. A field consists of 262.5 horizontal scanning lines across the picture tube. Two fields are necessary to complete a fully scanned TV picture (frame). First, one field is "sprayed" on the picture tube, starting at the top of the tube with Line I, and ending at the bottom with Line 262.5. Then, the next field begins at the top of the tube again with Line 262.5 and ends at the bottom with Line 525. The lines of the second field lie inbetween the lines of the first field. This property of falling in-between lines is called "interlacing". The two sweeps of the picture tube, or two fields make up one complete TV picture or "frame". Frame repetition is 30 Hz, therefore field repetition is 60 Hz.

Flagwaving

This is the term used to describe a TV sets ability to accept unstable playback pictures from a video tape recorder. All home VTR's have some degree of playback instability. A TV set with a long horizontal AFC time constant may not recover from the VTR's instability before the active picture is being scanned. This can cause a bending or flapping from side to side of the top inch or so of the screen. This movement is called "flagwaving".

Frame

One complete TV picture. See "Field".

Gate

A circuit which will deliver an output only when a specific combination of its inputs are present. For use in analog or digital applications.

Guard Band

This is the space between video tracks on the video tape in the SP mode. Guard bands contain no information.

Hall Effect IC

An external magnetic field causes current to flow in this type of device.

HD

Horizontal Drive signal.

Head Cylinder

A cylindrical piece of metal which houses the video heads. The tips of the heads protrude slightly from the surface of the cylinder so that they may scan the tape as the cylinder spins.

Head Switching

The action of turning off during playback, the video head which is not in contact with the video tape. A particular video head will be turned off 30 times per second. This is done so that the head which is not scanning the tape, and therefore not delivering a good signal, cannot contribute any noise to the playback signal.

Head Switching Pulse

The signal which is applied to the Head Amplifier to perform head switching. This is a square wave at 30 Hz, with a 50-50 duty cycle.

Helical

A word used to describe a general type of VTR in which the tape wraps around the video head cylinder in the shape of a 3-dimensional spiral, or "helix". The video tracks are recorded as a series of slanted lines.

IC

Integrated Circuit.

Interchangeability

A term used to describe how well a particular VTR will play back a tape recorded on another VTR of the same type. Good interchangeability indicates good playback.

Interlacing

The property of the scan lines of two television fields to lie in-between each other. See "Field".

Interleaving

A term used to indicate that the harmonics of the chrominance signal lie in-between the harmonics of the luminance portion of the video signal as it is viewed on a spectrum analyzer. This means that the color information of a video signal does not interfere with, although it is broadcast at the same time as, the luminance information.

Also, signals which have this interleaving property are not readily seen on a TV screen, because of their virtual cancellation characteristics.

Interleaving signals (fi) must have the following frequency relationship:

fi =
$$(\frac{2n+1}{2})$$
 x fH (n=0, 1, 2, 3, 4.....)
fH = 15,734 Hz (H sync frequency)

Jitter

The name of the effect on the playback picture if a VTR has too much "wow and flutter". The picture appears to have a rapid shaking movement.

L

Coil.

Luminance

This is the portion of video signal which contains the sync and B/W information.

MMV

Monostable Multi-Vibrator...Usually an IC device which gives a logic high or low output with a variable duration upon receipt of an input pulse or transition.

Non-Linear Emphasis

This is similar to regular emphasis with the difference that small level high frequency portions of the signal are given more of a boost than higher level high frequency portions.

NTSC

The National Television Systems Committee. These four letters identify the United States color television standard.

PG

Pulse Generator used in the servo circuits.

C

A term used to describe the graphic response of a filter or tuned amplifier.

R

Resistor.

Review

To scan the playback picture at a faster than normal speed in the Reverse direction.

RF

Radio Frequencies.

Rotary Chroma

The name of the process used in VHS to change the phase of the chrominance signal at a rate of 15,734 (same as H sync frequency) times per second.

Rotary Transformer

A device used to magnetically couple RF signals to and from the spinning video heads, thus eliminating the need for brushes.

Sample and Hold

A process used in comparator circuits by which the value of a particular signal is measured at a specific moment in time ...then this value is stored for later use.

Search

To scan the playback picture at a faster than normal speed in either the forward or reverse direction.

Servo

Short for Servo mechanism. This is an electro-mechanical device whose mechanical operation (for instance motor speed) constantly being measured and regulated so that it closely matches or follows an external reference.

Skew

Another way of saying Tension Error. Skew is actually the change of size or shape of the video tracks on the tape from the time of recording to the time of plyaback. This can occur as a result of poor tension regulation by the VTR, or by ambient conditions which affect the tape.

Subcarrier

The name of the 3.58 MHz continuous wave signal used to carry color information.

SS

Slow and Still.

T

Transformer.

TP

Test Point.

TR

Transistor

Tension Error

See "Skew"

Time Base Stability

A term used to describe how closely the playback video signal from a VTR matches an external reference video signal...in regard to sync timing rather than picture content.

Tracking

This is the action of the spinning video heads during play-back when they accurately track across the video RF information laid down during recording. Good tracking indicates that the heads are positioning themselves correctly, and are picking up a strong RF signal. Poor tracking indicates that the heads are off track, and picking up low level RF signal or noise.

VCO

Voltage Controlled Oscillator...An oscillator whose frequency of oscillation is governed by an external voltage.

Video Head

This is the electro-magnet used to develop magnetic flux which will put RF information on the tape. In VHS, two video heads are mounted in a rotating cylinder around which the video tape is wrapped. As the cylinder spins, each video head is allowed to alternately scan the tape.

Video Track

The name of the RF information laid down during recording, as a particular video head scans across the tape.

VHS

Video Home System.

VTR

Video Tape Recorder.

VV

Video to Video...or...the actual playback picture produced from a tape during playback.

VXC

Voltage Controlled Crystal Oscillator...Similar to VCO except that a quartz crystal is sued as a reference which can be varied.

White Clip

After emphasis, the positive going spikes (overshoot) of the video signal may be too large for safe FM modulation. A white clip circuit is used to cut off these spikes at an adjustable level.

XTAL

Abbreviation for crystal.

Y Signal

The B/W portion of a video signal containing B/W information and sync.

Service Mai Portable Video Cassette Recorder

Vol. 2

Mechanical Adjustment **Procedures** Electrical Adjustment **Procedures**

Panasonic



SPECIFICATIONS

Power Source: 12VDC

> Battery LCR-1812P Elec. Tuner Unit PV-A32E Prog. Tuner Unit PV-A35P (Not available independently) Multiple AC Adaptor PV-A40

Power Consumption: Television System:

Approx. 9.4W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track: 1 track

Tape Format: Tape width 1/2" (12.7 mm), high density

tape

SP mode: 1-5/16 i.p.s (33.35 mm/s) Tape Speed:

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 1 (SP), 2 (LP) or 3 (SLP) hours

with NV-T60

2 (SP), 4 (LP) or 6 (SLP) hours

with NV-T120

Less than 6 min. with NV-T120 FF/REW Time:

Video: 2 Rotary heads Heads:

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Video: VIDEO IN Jack (RCA type) Input Level:

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,

75Ω unbalanced PV-A32E

or UHF Input: UHF Ch14-Ch83,

PV-A35P | 300Ω balanced

Video: VIDEO OUT Jack (RCA type) Output Level:

 $1.0\,\mathrm{Vp}\text{-p}$, 75Ω unbalanced Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}$, $600 \, \Omega$ unbalanced

RF Modulated: Ch3/Ch4 switchable,

72 dB μ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz ~ 8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz, SLP: 150 Hz~5kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB

LP mode: better than 40dB SLP mode: better than 40 dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB LP mode: better than 40 dB

SLP mode: better than 40 dB

Operating

Temperature: 32°F-104°F (0°C-40°C)

Operating Humidity: 10% - 75%

Weight: 13.5 lbs (6.1 kg) (with battery) Dimensions: $12"(W) \times 4-1/2"(H) \times 9-11/16"(D)$

 $304(W) \times 114(H) \times 245(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

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CONTENTS

SPECIFICATIONS Cove	er
MECHANICAL ADJUSTMENT PROCEDURES 2-	- 1
Disassembly Of Cabinet Parts 2-	- 1
1. Disassembly flowchart 2-	- 1
2. Detailed disassembly method 2-	- 1
Adjustment Procedures 2-	-6
1. Replacement of upper cylinder unit 2-	-6
2. Replacement of DD cylinder unit 2-	-6
3. Position adjustment of cassette guide pin 2-	-7
4. Position adjustment of pressure roller 2-	-8
5. Confirmation of tape speed 2-	-8
6. Position adjustment of tension post 2-	-9
7. Measurement and adjustment of back tension 2-1	0
8. Confirmation / adjustment of brake torque 2-1	1
9. Confirmation of takeup torque 2-1	2
10. Position adjustment of safety switch 2-1	2
11. Adjustment of cassette holder 2-1	3
12. Height adjustment of reel table 2-1	3
13. Height adjustment of tape guide post 2-1	4
14. Tape interchangeability adjustment 2-1	5
15. Adjustment of V-stopper	7
16. Adjustment of takeup detector	8
17. Adjsutment of cam gear and mode select switch 2-1	8
18. Replacement of battery fuse	21
Servicing Fixtures & Tools	23
ELECTRICAL ADJUSTMENT PROCEDURES	24
1. Test Equipments 2-2	24
2. Adjustment Procedures	24
2-1. Power supply section	24
2-2. System control section	25
2-3. Servo section	26
2-4. Audio section 2-3	31
2-5. Video section	
2-6. Slow / still section	
Location Of Test Points And Controls 2-4	12

MECHANICAL ADJUSTMENT PROCEDURES

DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the PC Boards in order to find the item(s) necessary for servicing.
When reassembling, perform the step(s) in the reverse order.

- Notes: 1. Since this model is designed very compactly and uses locking tabs instead of mounting screws, work with extreme care for servicing.
- Final adjustments are required when the Cassette Guide and the Cassette Holder Unit were replaced and/or removed.
- Place the cloth or any other soft materials under the PC Boards or deck for preventing them being damaged while servicing.

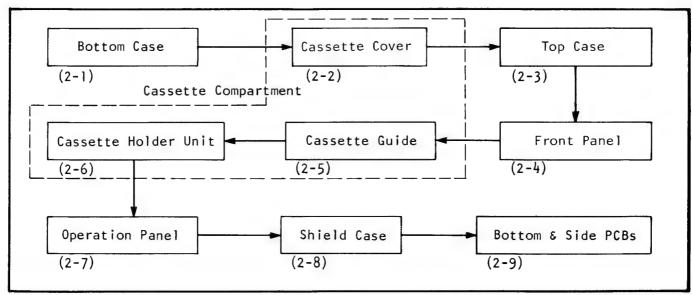


Fig. Ml Disassembly Flowchart

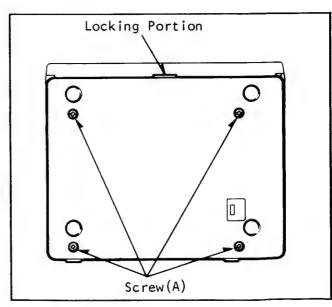
2. DETAILED DISASSEMBLY METHOD

2-1. Removal of the Bottom Case

- Place the deck upside down so the Bottom Case faces upward.
- 2. Remove 4 screws (A). Then remove the Bottom Case by lifting the rear portion of it.

Note:

When reinstalling, first insert the locking portion into the slot of the front panel.



2-1

Fig. M2 Removal of Bottom Case

2-2. Removal of the Cassette Cover

- Turn the deck over again so the Cassette Cover faces upward. And press the Eject Button to raise the Cassette Compartment.
- 2. Remove 2 screws (B). Then carefully lift and turn the rear portion of it to remove. Pay attention for not being damaged on the locking portion.

Note:

When reinstalling, first suit the locking portion of the cassette cover to the tab on the cassette holder unit.

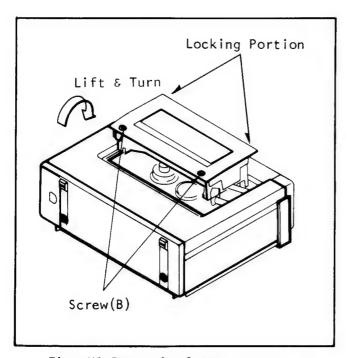


Fig. M3 Removal of Cassette Cover

2-3. Removal of the Top Case

- First confirm that the battery is inside the battery compartment or not.
 If it is, take the battery out.
- Remove 2 screws (C). Then carefully lift the rear portion and pull toward the rear of deck to remove. While removing, keep the handle up and hold it with your hand.

Note:

When reinstalling, first insert the locking portions into the front panel.

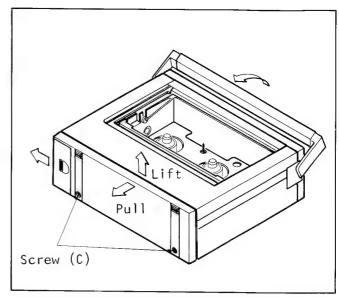


Fig. M4 Removal of Top Case

2-4. Removal of the Front Panel

- 1. Stand the deck so the control panel faces upward.
- 2. Hold the both right and left ends of the Front Panel and carefully lift and turn the top portion of it to remove.

Note:

Work this step with extreme care for not being damaged on the locking portions.

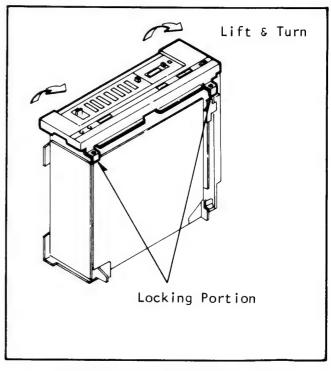


Fig. M5 Removal of Front Panel

2-5. Removal of the Cassette Guide

Remove 2 screws (D) and Cassette Guide.

Note:

When reinstalling, insert the cassette tape and ensure the clearance between tape and projections on cassette guide is more than 1 mm. Then tighten 2 screws (D).

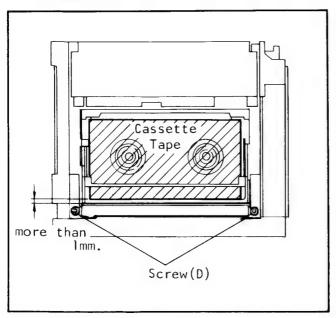


Fig. M6 Removal of Cassette Guide

2-6. Removal of the Cassette Holder Unit
Remove 4 red screws (E) and the Cassette
Holder Unit.

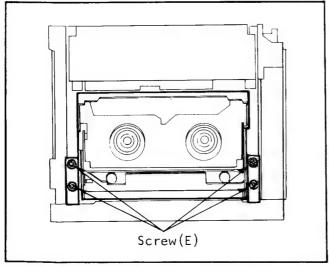


Fig. M7 Removal of Cassette Holder

Notes:

- When this part was removed or replaced, the final adjustment is required. Refer to "ADJUSTMENT OF CASSETTE HOLDER" section.
- 2. When reinstalling, ensure the pin located at lower left portion is engaged with the connection rod.

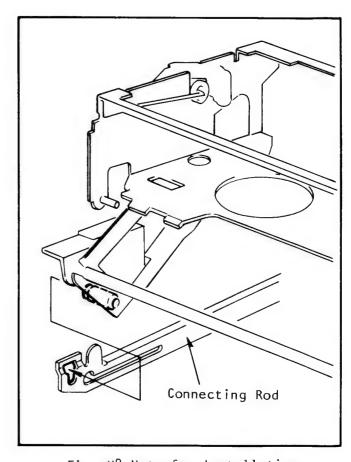


Fig. M8 Note for Installation

2-7. Removal of the Operation Panel

Notes:

- As the space of this portion is very compressed, especially work with care and ensure on each step.
- 2. The operation panel is not required to be removed except the cases of replacement of operation panel or servicing of components mounted on it or on System Control PC Boards.

Procedure:

- 1. Unlock 2 locking portions located on lower of each side.
- 2. Unlock 2 locking portions located on top of each side.
- Disconnect 2 connectors which are connected to the ear phone jack and the battery meter.
- 4. Carefully unlock 8 locking poritons which lock P.C. Board to the operation panel.

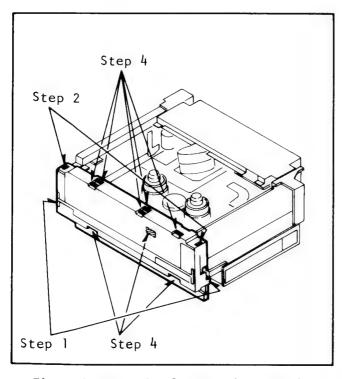


Fig. M9 Removal of Operation Panel

Notes:

- 1. When reinstalling, reconnect the 2 connectors.
- 2. Pay attention for not missing the operation buttons and knobs.

2-8. Removal of the Shield Case

Loosen 2 screws (F), remove a screw (G), pull the shield case toward the back of deck and lift it up to remove.

Note:

When reinstalling, ensure the red lead wire is restored around dumper correctly.

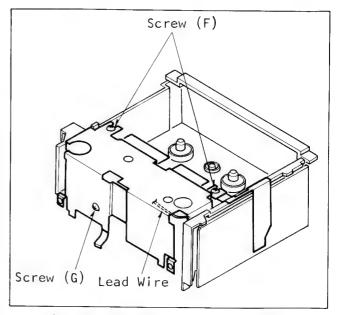


Fig. M10 Removal of Shield Case

2-9. Opening of the Circuit Board

Notes:

- Place the cloth or any other soft materials under the PC Boards for preventing them being damaged while servicing.
- This procedure mostly is required when the deck is with operation panel. In that case, first perform steps I and 2 of the "Removal of the Operation Panel" section.
- When reinstalling, ensure the connectors are connected and any electrical components are not damaged.

Procedure:

- 1. Disconnect a connector (P21) which is connect to the tape counter.
- 2. Remove 2 screws (H), unlock the 2 locking portions and carefully open the PC Board. Support the PC Boards with your hand to prevent them laid down.
- 3. Disconnect the 2 connectors (P17 & P18) on the Audio & Chrominance Board. And release the leads connecting between the Jack Panel Board and P16 from lead clamper. Then carefully lay down the PC Boards.

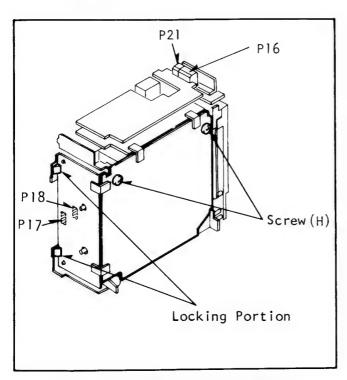


Fig. Mll Opening of PC Boards

ADJUSTMENT PROCEDURES

1. REPLACEMENT OF UPPER CYLINDER UNIT

Work with extreme care when removing or replacing the upper cylinder unit. Do not touch video heads during servicing.

- Remove the Bottom Case, Cassette Cover, Top Case and the Shield Case. Refer to ''DISASSEMBLY METHOD'' section.
- 2. Remove the screw (A) and Discharge Brush Unit. And unsolder the 4 leads which are color coded to match leads on the head relay board.
- 3. Remove the 2 screws (B) and gently lift the upper cylinder unit from the shaft.
- 4. Before reinstalling a new one, clean the DD cylinder shaft and surface engaged with it on the upper cylinder with soft cloth dampened with freon liquid.
- 5. Reinstall the new one so the color code of 4 leads match leads on the head relay board and tighten the 2 screws (B).
- 6. Resolder the 4 leads to head relay board and reinstall the Discharge Brush Unit.

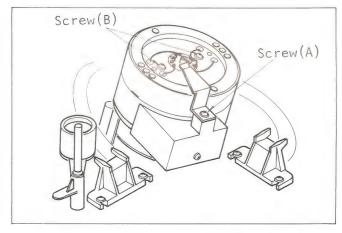


Fig. M12 Removal of Upper Cylinder

Note:

Upon completion of replacement, confirm the performance. And if any further maintenance is required, refer to the "TAPE INTERCHANGEABILITY ADJUST-MENT" section and perform the necessary items.

2. REPLACEMENT OF DD CYLINDER UNIT

Work with extreme care when removing or replacing the DD cylinder unit. Do not touch video heads during servicing.

- Remove the Bottom Case, Cassette Cover, Top Case, Front Panel and Shield Case. Then open the Bottom and Side P.C. Boards. Refer to "DISASSEMBLY METHOD" section.
- 2. Disconnect 2 connectors (P001 and P002) and remove the DD cylinder unit by removing 3 screws (A). Since there is very little clearance between DD cylinder and chassis, remove the cylinder gently and carefully. The P001 is connected to the DD cylinder Drive PC Board and the P002 is connected to the Head Amp Circuit.

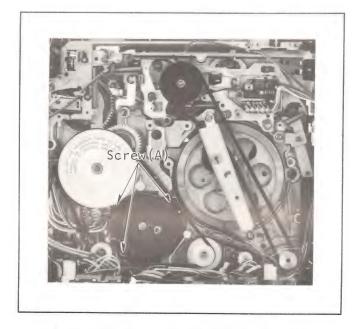


Fig. M13 Removal of DD Cylinder

For P002, first remove the shield case and disconnect the P002.

Note:

Pay particular attention to how these wires are routed along the chassis so that proper lead dress can be restored when the DD cylinder is reinstalled.

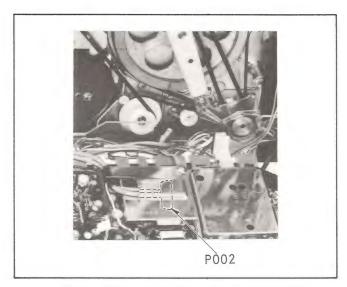


Fig. M14 Location of Connector

- Remove the upper cylinder unit from the DD cylinder and reinstall it on new one. To perform this step, refer to "REPLACEMENT OF UPPER CYLINDER UNIT" section.
- 4. Reinstall the new DD cylinder unit to the chassis and restore the leads and connect the POOl and POO2.

Note:

Upon completion of replacement, confirm the performance. And if any further maintenance is required, refer to the "TAPE INTERCHANGEABILITY ADJUSTMENT" section and perform the necessary items.

3. POSITION ADJUSTMENT OF CASSETTE GUIDE PIN

This adjustment is required only when the cassette guid pin was replaced or it's mounting screw was loosened.

Equipment Required:
Guide Pin Fixture ... (VFKS0006)

- Remove the Bottom Case, Top Case, Cassette Compartment and the Shield Case, (Refer to the section of "DIS-ASSEMBLY METHOD", Items 2-1, 2-2, 2-3, 2-6 and 2-8).
- 2. Remove the 2 screws (A) and the Loading Motor Drive PC Board.

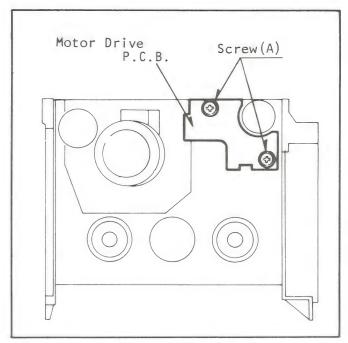


Fig. M15 Motor Drive PCB

3. Remove the Opener Unit by removing the screw (B) and the Pressure Roller Unit by removing the Retaining Ring & Spring.

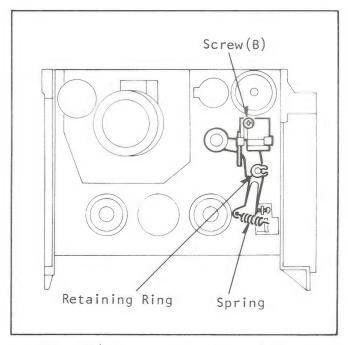


Fig. M16 Opener & Pressure Roller

4. Place the fixture, set the cassette guide pin into the hole of the fixture.

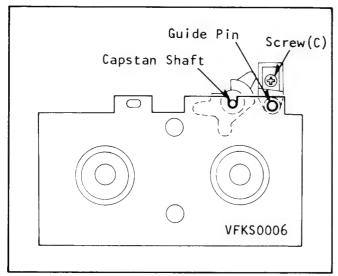


Fig. M17 Adjustment of Guide Pin

5. Move the fixture so the capstan shaft fits snugly in the notch of the fixture and tighten the screw (C).

4. POSITION ADJUSTMENT OF PRESSURE ROLLER

Specification: $0.7 \sim 1.5 \text{ mm}$

Remove the Cassette Compartment.
 Connect the tuner input cable or insert
 the RCA pin jack to the video in Jack.
 Blind the photo transistors (Q6551 &
 Q6552), push the eject lock lever
 down, turn the safety switch on by
 hand and push the play button and
 record button to simulate the REC
 mode.

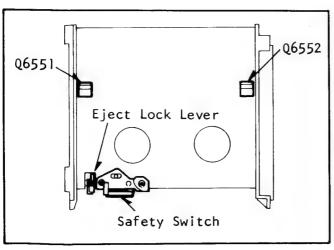


Fig. M18 Simulation of REC-PAUSE

- 2. Continuously push the pause button to simulate the REC-PAUSE mode.
- 3. Confirm the clearance between the capstan shaft and pressure roller is within the specification.
- 4. If it is out of spec., adjust it by turning a screw (A) to obtain the specified clearance.

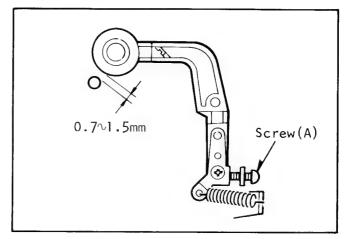


Fig. M19 Spec. of Clearance

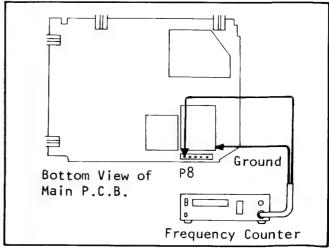
Note:

Upon completion of the adjustment, remove the object covered the photo transistors and the cable (or jack).

5. CONFIRMATION OF TAPE SPEED

- * Equipment Required: Frequency Counter VHS Alighment Tape, 2-4-6 Hours ... VFM8080H6.
- 1. Remove the Bottom Case, Cassette Cover, Top Case and the Front Panel.
- Connect the frequency counter to the output terminals of the capstan F.G. signal.

(Connect one to Pin No. 5 of P8, another one to ground line).



2-8 Fig. M20 Connection of Freq. Counter

- Playback the monoscope portion of the alignment tape and wait until tape movement is well stabilized.
- 4. Read the frequency counter and confirm it is within the specification.
- 5. If it is out of spec., since three different capstan belts are available, use appropriate belt to obtain specified tape speed.

Part No. of Belt	Mark on Belt (Rotating Direction)	Case of Use
VDVS0021A	(Yellow) (White) √	Less than 1431.5Hz
VDVS0021B	<u>{</u>	Within Spec. 1438.5±7Hz
VDVS0021C	<i>∑</i> (←)	More than 1445.5Hz

Fig. M21 Belt Indication

6. When to replace the Capstan Belt, first remove 2 screws (A), Thrust Holder, and the Fast Wind Belt. Then remove the Capstan Belt and install the appropriate belt.

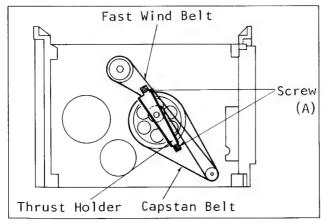


Fig. M22 Replacement of Capstan Belt

Notes:

- Do not put any oil or grease on the belts or pulleys.
- When installing a new capstan belt, make sure the group of two, three or four stripes is positioned in the direction of rotation of capstan motor pulley (in PLAY mode) and on outside.

6. POSITION ADJUSTMENT OF TENSION POST

Equipment Required:

Tension Post Adjustment Plate . (VFKS0002) Fine Adjustment Screwdriver ... (VFK0136)

 Remove the cabinet parts, open PC Boards and stand the deck so the rear portion of deck faces down.

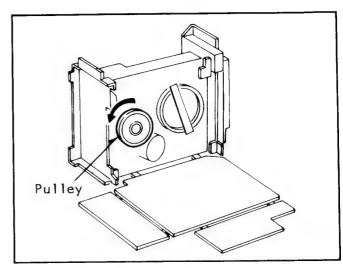


Fig. M23 Pulley on Bottom View

 Turn pulley counter-clockwise slowly (viewing from bottom side) by hand to simulate the play mode. Then place the deck up-rightly.

Note:

While turning pulley, do not supply excessive force. Twenty turns of pulley makes paly mode (from the start, posts are just moved, to loading completion).

- 3. Place the adjustment plate, slightly loosen a screw securing the tension band bracket.
- 4. Insert the fine adjustment screwdriver into the hole and move the tension band bracket in either of direction so the tension post just touches the fixture.

Note:

While adjusting, carefully rotate the adjustment screwdriver so the T.C. Link does not move.

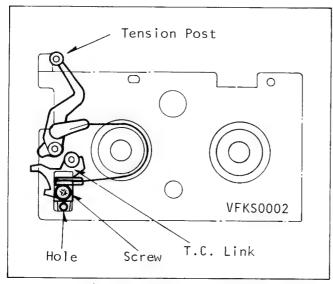


Fig. M24 Adjustment of Tension Post

7. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

A. Measurement Procedure

- # Equipment Required:
 Back Tension Meter (Tentelometer, Model
 T2-H7-UM, Purchase locally)
 VHS Cassette Tape (120 Minutes tape)
- \star Specification: 25 \circ 30 g
- 1. Remove the Bottom Case, Cassette Cover, Top Case, Cassette Compartment and the Shield Case.
- Pull the erase head in the direction indicated by the arrow and hold it by adhesive tape.
- 3. Play back the cassette tape from its beginning and wait until tape running has stabilized. (for approx. 10 to 20 seconds)

- 4. Insert tension meter in tape path and confirm reading.
- 5. If the reading is out of spec., continuously perform the adjustment procedure.

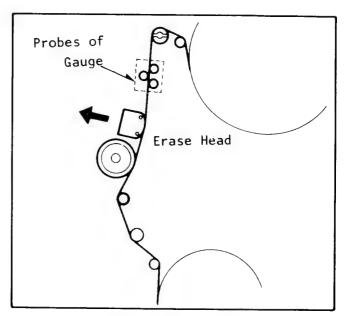


Fig. M25 Measurement of Back Tension

Notes:

- Make sure that the three probes of the meter are all in good contact with tape, but out of contact with any parts while measuring.
- 2. It is recommended to be measured three times as tension meter is very sensitive.

B. Adjustment Procedure

- * Equipment Required: Fine Adjustment Screwdriver ... (VFK0136)
- Loosen a screw (A) and insert the fine adjustment screwdriver into the hole (B).
- Move the adjustment plate in either of direction indicated by the arrow to obtain the specified tension. Turn the driver clockwise to lower tension, counter-clockwise to raise it.
- 3. Tighten the screw (A) and varify tension with the meter once again.
- 4. Reinstall the shield case and cabinet parts.

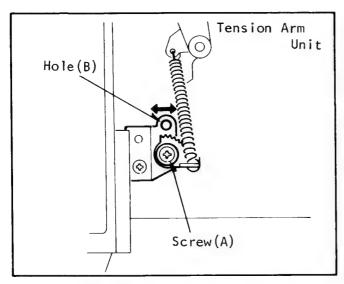


Fig. M26 Adjustment of Back Tension

Note:

Upon completion of adjustment, remove the adhesive tape.

8. CONFIRMATION/ADJUSTMENT OF BRAKE TORQUE

A. Confirmation Procedure

Equipment Required:
Dial Torque Gauge ... (VFK0133)
Adaptor for Gauge ... (VFK0134)

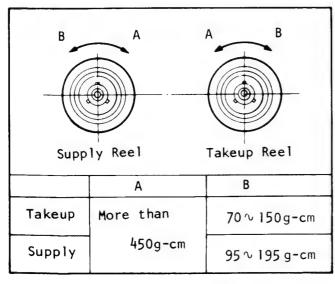


Fig. M27 Spec. of Brake Torque

- 1. Attach the adaptor to the torque gauge. And place the deck in STOP mode.
- 2. Place the torque gauge on the reel table. The weight of gauge should not rest on the reel table.

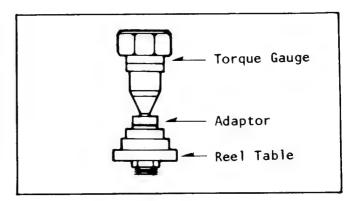


Fig. M28 Measuring Method

 Turn torque gauge in the direction indicated as A or B until the brake begins slipping.
 Read the torque when it begins slipping.

B. Adjustment Procedure

To adjust the brake torque, change the notch.

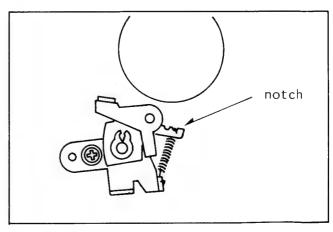


Fig. M29 Adjustment of Torque

Note:

If proper brake torque could not obtained by changing the spring position, clean the rotating surface of the reel table with soft cloth and confirm torque before replace it.

9. CONFIRMATION OF TAKEUP TORQUE

- # Equipment Required:
 Dial Torque Gauge ... (VFK0133)
 Adaptor for Gauge ... (VFK0134)
- * Specifications: in PLAY mode 120 \sim 190 g-cm in F.F. mode more than in REWIND mode 400 g-cm
- 1. Attach the adaptor to the torque gauge.
- Cover the takeup and supply photo transistors (Q6552 and Q6551) with opaque paper. Lower the cassette up unit (without cassette cover), and turn power switch on.
- Set a torque gauge to the Takeup Reel Table, push the play button and read torque on gauge. Also work for F.F. mode by pushing the F.F. button.

Note:

While measuring, the weight of gauge should not rest on the reel table.

- 4. Set a torque gauge to the Supply Reel Table, press the rewind button for confirmation of the rewind mode.
- 5. Remove the opaque paper and reinstall the cassette cover.

Note:

There are no adjustments here.

If the torque readings are off considerably, rollers or idlers or reel tables may need replacement.

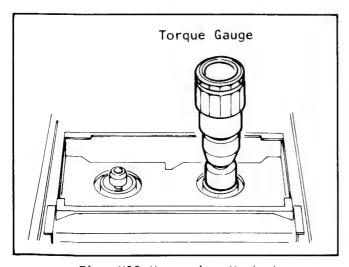


Fig. M30 Measuring Method

10. POSITION ADJUSTMENT OF SAFETY SWITCH

This adjustment is required only when the Safety Switch was replaced or mounting screw were loosened.

- * Equipment Required:
 Cassette Holder Fixture ... (VFKS0004)
- 1. Remove the Bottom Case, Cassette Cover, Top Case, Cassette Compartment and Front Panel. And open the operation panel.
- 2. Place the fixture, just slightly loosen 2 screws (A) by about half turn.

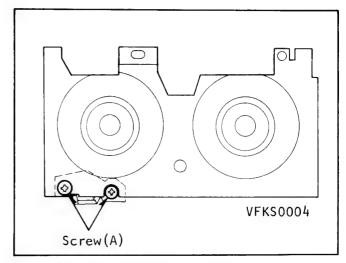


Fig. M31 Adjustment of Safety Switch (1)

 Turn the switch base counter clockwise and then slowly turn clockwise until switch turns on (it clicks). Tighten 2 screws.

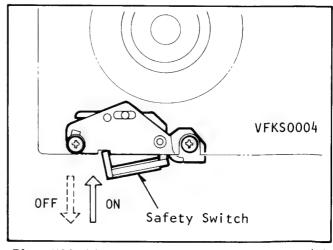


Fig. M32 Adjustment of Safety Switch (2)

11. ADJUSTMENT OF CASSETTE HOLDER

Equipment Required: Cassette Holder Fixture ... VFKS0004

Note:

Before adjustment, ensure the cassette lock lever is unlatched.

- Remove the Cassette Guide and slightly loosen 4 screw (A). Keep the cassette holder ejected condition.
- 2. Insert the fixture and push all the way in till it touches the tabs on the cassette holder. Hold the fixture and cassette holder together with your hand, then slowly lower them with watching all holes and cut-outs till the cassette holder latches.

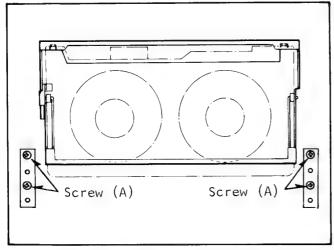


Fig. M33 Adjustment of Cassette Holder

- 3. Press the center portion of the fixture down not for missing adjusted position then tighten 4 screws.
- 4. Supply power and ensure the smooth movement by repeating pressing down and ejecting of the cassette holder.

12. HEIGHT ADJUSTMENT OF REEL TABLES

* Equipment Required:
Post Adjustment Plate ... (VFKS0010)
Reel Table Height Gauge.. (VFKS0009)

* Specification 0.1 ± 0.1 mm

- 1. Remove the Cassette Compartment.
- 2. Place the post adjustment plate over the reels, and put the gauge on it. Set the gauge to zero "O" with the condition that scraper of gauge touches the cut-out portion of the plate.

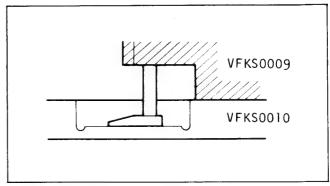


Fig. M34 Adj. of Reel Table Height (1)

3. Then measure the top portion of reel table and confirm the difference against the condition just performed in former step. Do same for the other reel table.

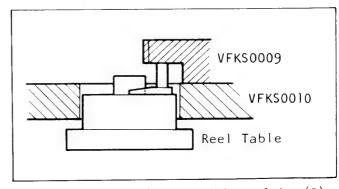


Fig. M35 Adj. of Reel Table Height (2)

- 4. If the difference is more than 0.1 mm (higher or lower), adjust the height of reel table to obtain the specified height.
- 5. For adjustment, change the poly slider washer located under the reel table. (The washer is available in sizes of thickness, t = 0.13 mm, 0.25 mm and 0.5 mm).

13. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

*	Equipment Required:	
	Hex. Wrench, (0.9 mm)	(VFK0146)
	Post Adjustment Plate	(VFKS0010)
	Reel Table Height Gauge	
	Nut Driver	
		locally)
	Post Adjustment	
	Screwdriver	(VEK0137)

1. Remove the cassette compartment and place the adjustment plate.

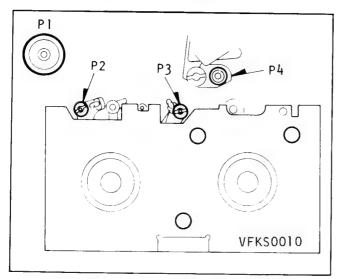


Fig. M36 Adj. of Guide Post Height (1)

2. First lower all posts so the condition of height becomes as shown. (Lower end of post, tape guide, should be lower than scraper.)
Loosen a hex. screw located lower portion of posts (P2 & P3), then turn top of them with post adjustment screwdriver.

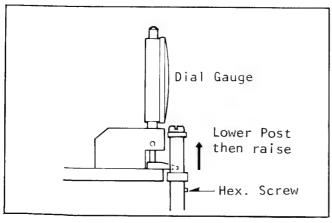


Fig. M37 Adj. of Guide Post Height (2)

3. Place the dial gauge on the adjustment plate and fit the scraper to the post. The condition to fit the scraper should be as shown.
(The scraper of gauge should be fully lowered till it touches the plate).

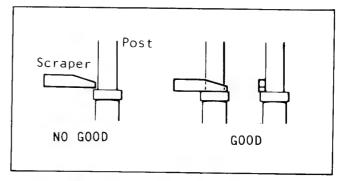


Fig. M38 Adj. of Guide Post Height (3)

4. Set the dial gauge to zero "O" and slowly raise the post until it just touches the scraper.

For adjustment of Pl and P4, use the nut driver.

(The post cap on P4 can be removed by turning counter clockwise.)

For adjustment of P2 and P3, use the post adjustment screwdriver.

Note:

Upon completion of adjustment, tighten hex. screws on the P2 and P3 also install the post cap on post 4. When the post cap on P4 is reinstalled, the direction of it should be as shown below viewing from the direction indicated by the allow.

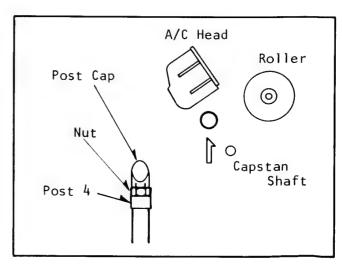


Fig. M39 Adj. Installation of Post Cap

14. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, make sure that the tracking control is set into the detent (fixed) position.

14-A Confirmation of Tape Travel

To prevent the alignment tape from being damaged, use a normal cassette tape for confirmation.

1. Playback a cassette tape and confirm that tape travels without curling at the edges of the tape.

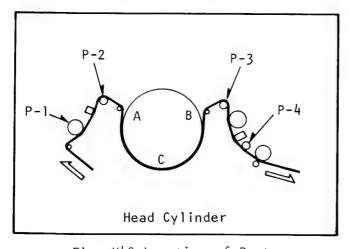


Fig. M40 Location of Posts

 If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (for P2 & P3) or nut driver (for P1 & P4). Before turning the posts, slightly loosen the hex. screws on them and upon completion, tighten them.

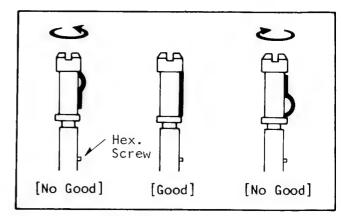


Fig. M41 Height Adjustment

14-B Confirmation of A/C Head Height

This confirmation is required when the A/C Head was replaced and to adjust the height of it preliminary, for final adjustment, perform next item 14-C.

- Looking at the lower edge of the control head with the tape running, ensure the lower edge of tape runs along the lower edge of the control head.
- 2. If it doesn t, just slightly turn the nut (A) in either directions to correct it.

Turn it clockwise to lower the head, counter-clockwise to raise it.

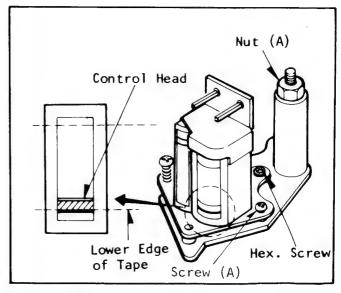


Fig. M42 A/C Head Pre-Adjustment (1)

14-C Height Adjustment of A/C Head

- 1. Connect the oscilloscope to the audio output jack on the side of the deck.
- 2. Playback the monoscope portion (6 kHz, Audio) of the alignment tape, VFM8080H6.
- Adjust the height by turning the screw

 (A) indicated in the Fig. M42 for the maximum output level. Slowly and slightly turn the screw (A) for this adjustment.

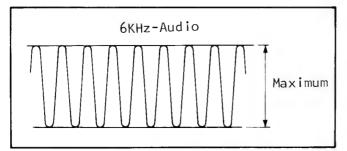


Fig. M43 A/C Head Height Adj.

14-D Confirmation of Tilt of A/C Head

This procedure should be performed after the height adjustment of P4.

- 1. Playback the tape and confirm the tape runs between lower and top limitters of post. And confirm the confition of tape running.
- If the waving or frilling is apparent on the lower or top edge of the tape, correct it by turning a hex. screw located on the A/C Head Base. (See Fig. M42.)

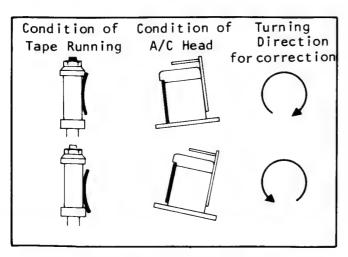


Fig. M44 A/C Head Tilt Adj.

- 14-E Horizontal Position Adjustment of A/C Head
- 1. Connect the oscilloscope to the Test Point, TP3014.
- 2. Playback the monoscope portion of the alignment tape, VFM8080H6, and confirm the RF envelope figure.
- 3. If the adjustment is required, set the H-position screwdriver into the slot of the adjustment nut and rotate in either of direction for the maximum envelope output.

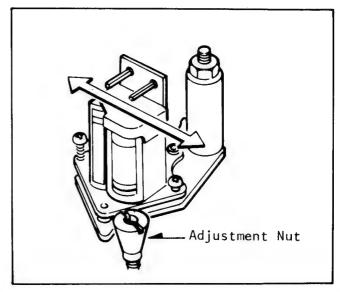


Fig. M45 A/C Head Azimuth Adj.

14-F Confirmation/Adjustment of Envelope Output

1. Connect the oscilloscope to the Test Point, TP3014.

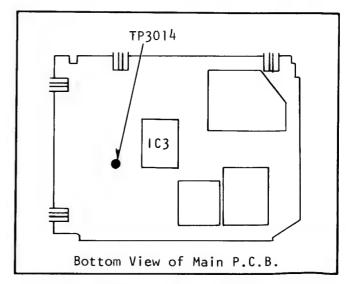


Fig. M46 Location of TP3014

2. Playback the monoscope portion of the alignment tape, VF8080H6 and adjust the height of posts P2 & P3 by watching the scope display so the envelope figure becomes as flat as possible. (V1/V-max ≥ 0.7, V2/V-max ≥ 0.8) When the adjustment is required, turn top of post with post adjustment screwdriver. For adjustment of P2 & P3, refer to

step 2 of item 14-A.

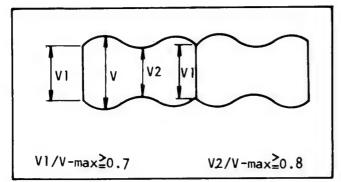


Fig. M47 Envelope Figure - (1)

3. When the scope display is as follows, adjust the height of P2 shown below.

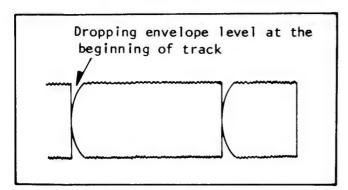


Fig. M48 Envelope Figure - (2)

4. When the scope display is as follows, adjust the height of P3 shown below.

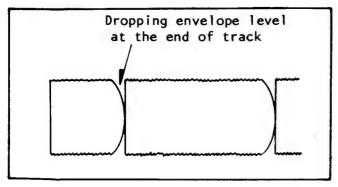


Fig. M49 Envelope Figure - (3)

5. The scope display with P2 and P3 adjusted correctly should become as shown below.

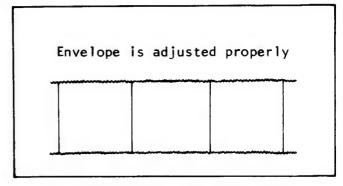


Fig. M50 Envelope Figure - (4)

15. ADJUSTMENT OF V-STOPPER

* Equipment Required:

V-Stopper Adjustment
Fixture (VFKS0007)

- Remove the DD Cylinder Unit from chassis. (Upper Cylinder Unit is not required to be removed.)
 Refer to "REPLACEMENT OF DD CYLINDER UNIT" section.
- 2. Keep 4 screws (A) loose, set the fixture by two setting pins.

 Push the V-stoppers' snugly aginst the pins and tighten the 4 screws (A).

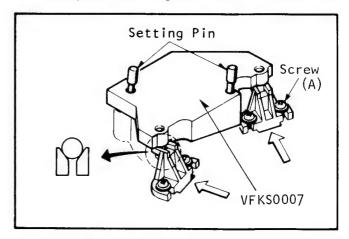


Fig. M51 Adjustment of V-Stopper

3. Upon completion of the adjustment, simulate to loading completion and ensure that posts smoothly fit the V-stoppers. To perform this, refer to step 2 of item 6, "POSITION ADJUST-MENT OF TENSION POST" and the Fig. M23.

Then reinstall the DD Cylinder Unit.

16. ADJUSTMENT OF TAKEUP DETECTOR

This adjustment is required when the Tape Counter or the Detector PC Board (Hall IC) is replaced or loosened.

* Equipment Required:

Fine Adjustment Screwdriver,
3mm\$\phi\$\ldots\text{......} (VFK0136)

Specification: 0.2 \sim 0.7 mm.

Before installing the Takeup Detector Bracket to the chassis, confirm the clearance is within the spec. If it is out of spec., slightly loosen a screw (A) and adjust the position of the Detector PC Board with the Fine Adjustment Screwdriver to obtain the specified clearance.

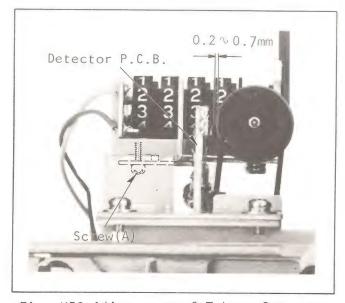


Fig. M52 Adjustment of Takeup Detector

17. ADJUSTMENT OF CAM GEAR AND
MODE SELECT SWITCH

General Condition

The mechanism of this model is mostly engaged to the electrical circuit, System Control Circuit, through the mode select switch. Therefore the relation between the mode switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If the adjustment of this item is performed improperly, the deck will be unloaded or compulsorily stopped. And it will result in being damaged at any mechanical or electrical parts.

Note:

The step II of this procedure describes the adjustment of case that mode select switch is replaced.

Adjustment Procedures:

 Turn loading gear clockwise until the post 2 and 3 were fully unloaded. The small projection on the loading gear will be top portion at the unloading condition.



Fig. M53 Adjustment Procedure - (1)

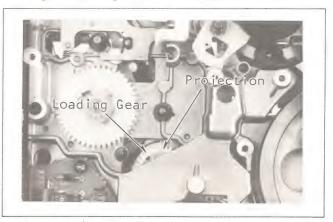


Fig. M54 Adjustment Procedure - (2)

 Install the action gear so the hole on the action gear meets the projection on the loading gear. Ensure that the loading gear is still fully unloaded condition.

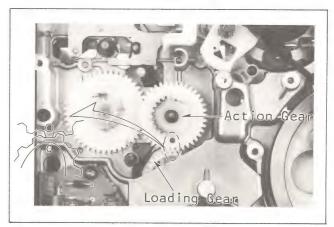


Fig. M55 Adjustment Procedure - (3)

2 - 18

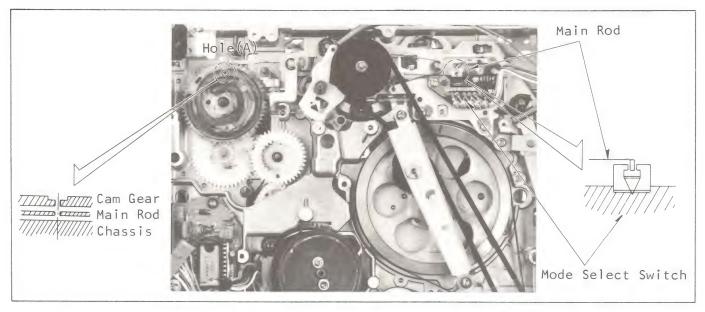


Fig. M56 Adjustment Procedure - (4)

- 3. Slowly slide the main rod so the V-shaped mark meets the V-shaped mark of the mode select switch. This may simulate stop mode (unloading completion) of main rod and mode select switch.
- 4. Insert the cam gear so the hole (A) on the gear meets the hole on the main rod. To meet the two holes easier, use the small hex. wrench (VFK75) or metal pin. Also ensure the two V-shaped marks are fixed and the simple slot side of the cam gear is apparent.
- 5. Install the sector gear so the pin on the sector gear meets the inner slot of the cam gear (simple slot side). And install 2 retaining rings to mount cam gear and sector gear.

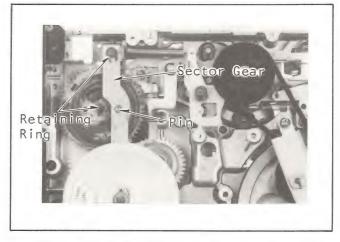


Fig. M57 Adjustment Procedure - (5)

6. Final figure should become as illustrated below, and at the same time two V-shaped marks are fixed at the mode select switch.

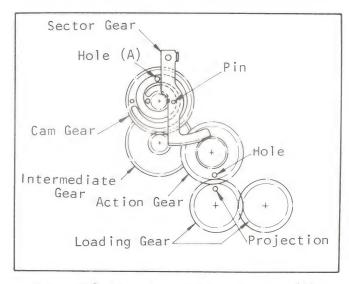


Fig. M58 Adjustment Procedure - (6)

7. Install the gear protector and tighten the nut for mounting it. And install the large gear so the teeth of it contact the outer teeth of the intermediate gear. Then install a retaining ring to mount it.

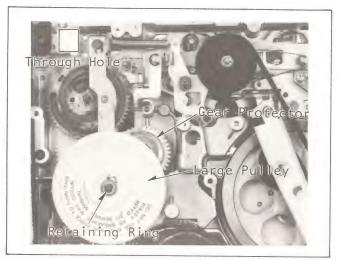


Fig. M59 Adjustment Procedure - (7)

- 8. Before installing the Cassette Lock Detector Unit, confirm that the Lock Lever Unit is set unlocked condition.
- 9. Then install the Cassette Lock Detector Unit from the through Hole on the chassis. And while installing, perform that the indicated portion of the main rod is set between two tabs as shown below.

Turn pulley in either direction to obtain the best position for performing this step.

10. Tighten 2 screws (B), install the belt and belt cover and tighten a screw (C). Turn the large pulley in both direction to confirm the smooth movement of this mechanism.

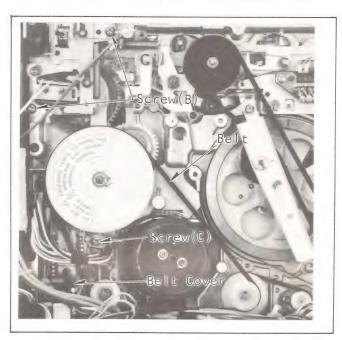


Fig. M61 Adjustment Procedure - (9)

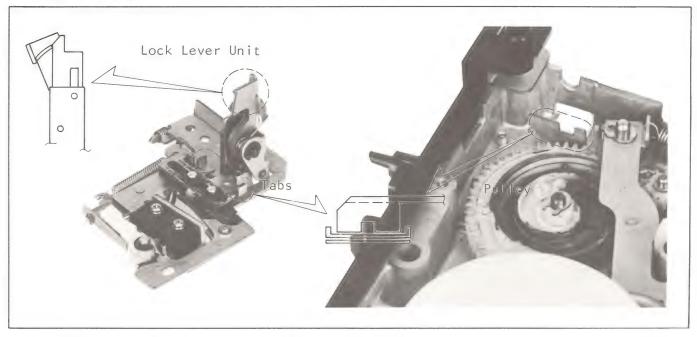


Fig. M60 Adjustment Procedure - (8)

11. (Adjustment of Mode Select Switch) Fix the main rod in the unloading completion condition, meet the Vshaped notch of the switch and the tab on the main rod then tighten 2 screws (C).

Upon completion, ensure the movement of the deck is normal condition.

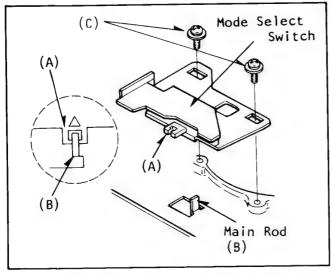


Fig. M62 Adjustment of Mode Select Sw.

18. REPLACEMENT OF BATTERY FUSE

CONFIRMATION:

Before fuse replacement, confirm that the voltage of the battery terminal is zero $^{11}0^{11}$.

If any voltage is measured, fuse replacement is not required.

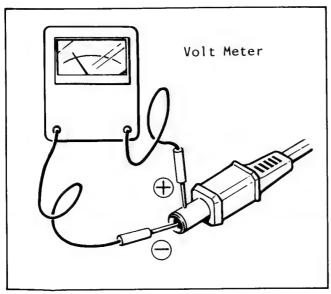


Fig. M63 Pre-Confirmation of Fuse

Fuse replacement procedure:

1. Cut the outer label with a knife as indicated.

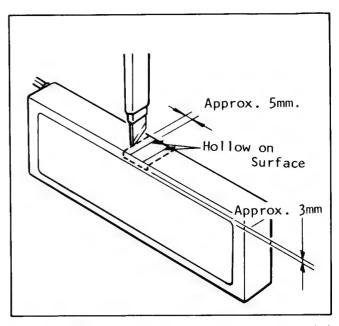


Fig. M64 Battery Fuse Replacement - (1)

2. Remove the label and lift the plastic cover.

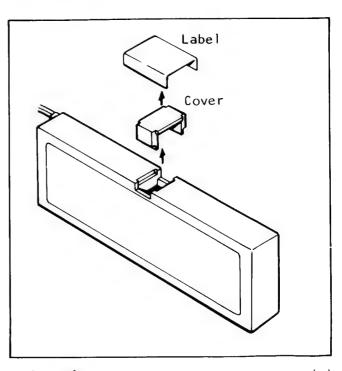


Fig. M65 Battery Fuse Replacement - (2)

3. Bend the gray lead wire to the outside with long nose pliers. Carefully pull out the 2 black wires and continue to pull out the fuse.

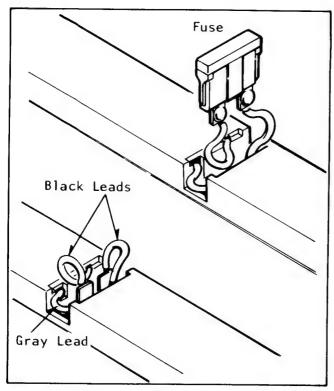


Fig. M66 Battery Fuse Replacement - (3)

Note:

While this step is being performed, be careful not to damage the lead wires or the fuse.

4. Unsolder the 2 lead wires and remove the fuse. Replace the fuse which is read and marked with a "20" in white paint. (Part No. VSFS0002) When resoldering, do not supply excessive heat and use corrosive type solder.

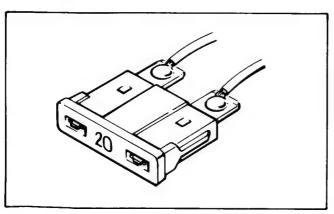


Fig. M67 Battery Fuse Replacement - (4)

- Restore the fuse and lead wires within the fuse compartment and confirm the voltage at the battery terminal.
- 6. Install the plastic cover. No specific direction for installation is required. Confirm that the plastic cover is flush and not lifted by the wires within the fuse compartment.
- 7. Replace the label as indicated (Part No. VQLS0248).

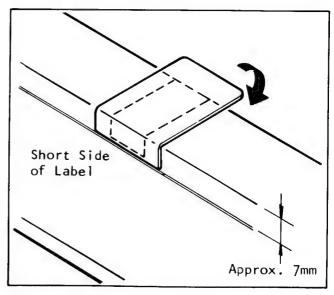
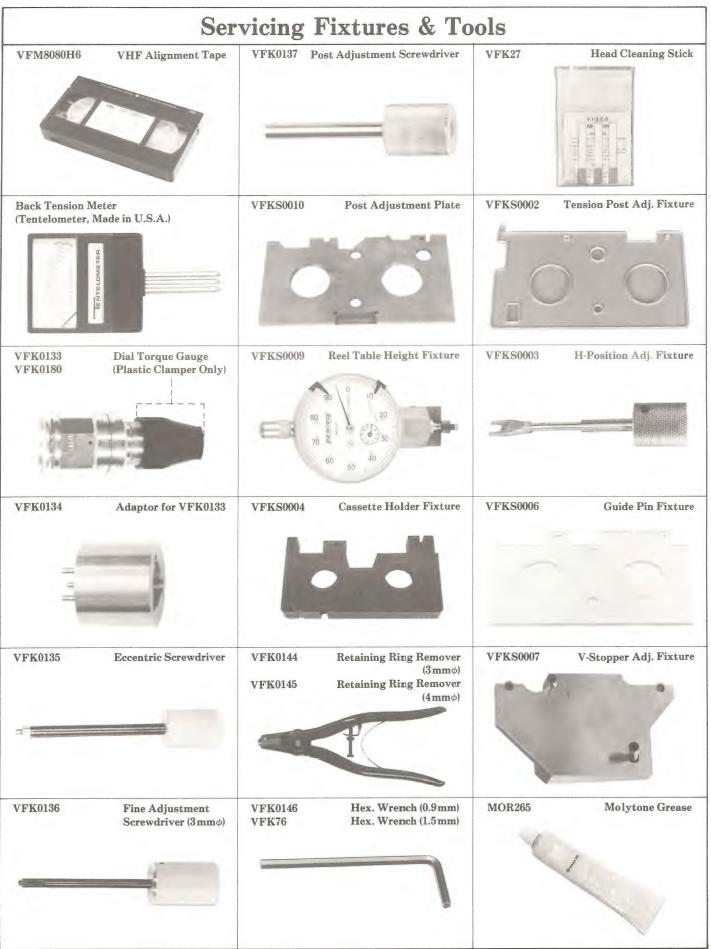


Fig. M68 Battery Fuse Replacement - (5)



ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete eletrical adjustment procedures which may be required for electronic circuits of 2/4/6 hour selectable portable VHS video cassette recorder.

1. Test Equipment

To perform the electrical adjustments completely, the following equipment is required.

- 1. VTVM (Vacuum Tube Volt Meter) or DVM (Digital Volt Meter) Voltage Range: 0.001-50V
- Dual-trace Oscilloscope Voltage Range: 0.005 - 50 V/Div. Frequency Range: DC - 10 MHz Probes: 10:1, 1:1
- Frequency Counter Frequency Range: 0 - 10 MHz
- 4. Signal Generator Sinewave: 0 - 10 MHz
- 5. Color TV Receiver or Monitor
- 6. Plastic Tip Driver
- 7. VHS Alignment Tape VFM8080H6



Fig.El

Start Counter Reading	0	017±4	092 ± 6	130 ± 10
Video	Blank	Monoscope	Color Bars	Multi-Burst
Audio	Blank	6KHz	3 KHz	1 KHz

Fig.E2

8. SWEEP GENERATOR Frequency Range: 0 - 10 MHz

2. Adjustment Procedures

NOTE: Components and Test Points in each section are series numbers. But for easy alignment only the last numbers are used on P.C. Board.

These adjustment procedures consist of the following sections.

		SERIES
1.	Power Supply Section	1000
2.	System Control Section	6000+6200
3.	Servo Section	2000
4.	Audio Section	4000
5.	Video SectionLUMINANCE	3000
	CHROMINANCE	8000
6.	Slow/Still Section	2700
7.	Loading Motor Drive Section	
		6400

2-1. Power Supply Section

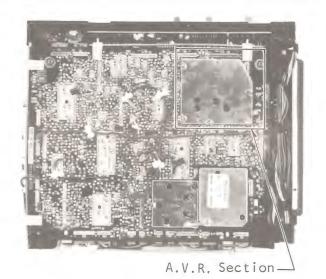


Fig.E3

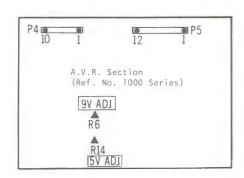


Fig.E4

2-1-1. +9V, +5V, Regulator Adjustment

Test Points: TP1001

TP1002

Adjustments: R1006 (9V)

R1014 (5V)

- 1. Supply a video signal to the Video Input or plug in 10 pin connector and tune in a local on-air TV program.
- Connect the DVM to TP1001 on the power supply section.
- Place the unit in RECORD mode and make a recording.
- 4. Adjust the +9 V (R1006) for +9.1 ± 0.1 VDC.
- 5. Connect the DVM to TP1002 on the same section.
- 6. Adjust the +5 V (R1014) for 5.1 \pm 0.1 VDC.

2-2. System Control Section

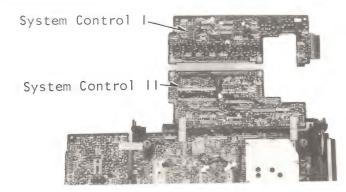


Fig.E5

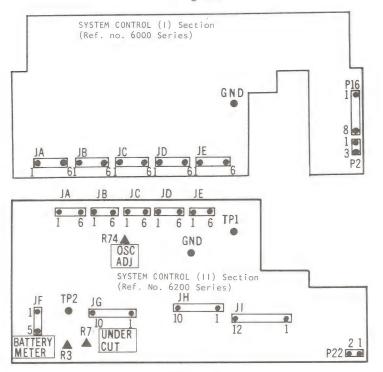


Fig.E6

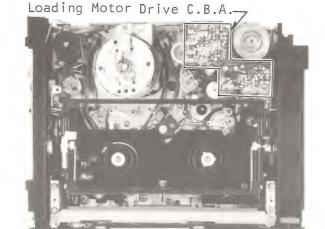
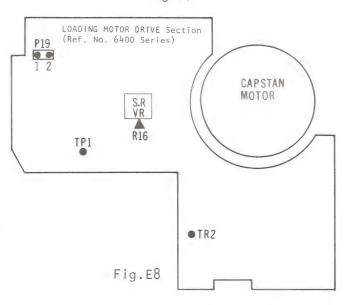


Fig.E7



2-2-1. Short Rewind Tape Length

Test Point: TP6401

Adjustment: R6416 (S.R. VR)

- Supply a video signal to the video input or plug in 10 pin connector and tune in a local on-air TV program.
- 2. Place the unit in the SP record mode.
- 3. Connect the scope to TP6401 on the loading motor drive circuit.

 (Use scope in DC mode, you should measure approx. 10V)
- 4. Push the pause button, the unit will go into short rewind. During short rewind, adjust the S.R.VR (R6416) so the voltage is 5.5 ± 0.2 V DC.
- 5. Remove the scope from TP6401.

2-2-2. UNDER CUT Adjustment

Test Point: TP6201

Adjustment: R6207 (UNDER CUT)

(AC Adaptor)

- a. Connect a resistor 33 $k\Omega$ to R107 in parallel.
- b. Connect the DVM to TP6201.
- c. Adjust the CHARGE LEVEL (RII3) so the voltage is 10.3 VDC.
- d. Proceed to STEP 1.

(P-Tuner Unit)

- a. Connect a resistor 33 $k\Omega$ to R115 in parallel.
- b. Connect the DVM to TP6201.
- c. Adjust the CHARGE LEVEL (R122) so the voltage is 10.3 VDC.
- d. Proceed to STEP 1.
- 1. Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording.
- 3. Turn the UNDER CUT (R6207) on the system control II board fully counter clockwise and slowly return to the clockwise until the point which places the unit in STOP mode.
- 4. Remove the resistor.
- 5. Then adjust the CHARGE LEVEL (R113 AC Adaptor, R122 p-Tuner Unit) for +12 ± 0.1 V.

2-2-3. Battery Meter Adjustment

Adjustment: R6203 (VR METER)

(AC Adaptor)

- a. Connect a resistor 33 $k\Omega$ to R107 in parallel.
- b. Connect the DVM to TP101.
- c. Adjust the CHARGE LEVEL (R113) so the voltage is 10.8 ± 0.05 VDC.

(P-Tuner Unit)

- a. Connect a resistor 33 $k\Omega$ to R115 in parallel.
- b. Connect the DVM to TP102 on the power supply board.
- c. Adjust the CHARGE LEVEL (R122) so the voltage is 10.8 ± 0.05 VDC.
- 1. Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording.

- Adjust the METER (R6203) on the system control II board so the indicator comes on the white line between red zone and blue zone of the BATTERY Meter.
- 4. Remove the resistor.
- 5. Then adjust the CHARGE LEVEL (R113AC Adaptor, R122 P-Tuner) for +12 ± 0.1V.

2-3. Servo Section

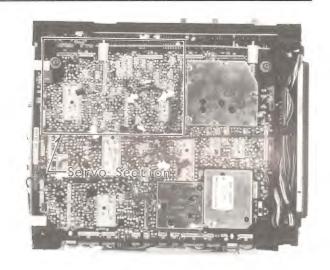


Fig.E9

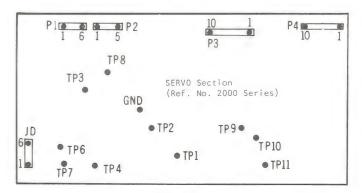


Fig.E10

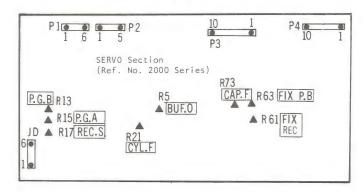


Fig.Ell

2-3-1. 60 Hz Reference Oscillation Confirmation

Test Point: TP2001

- 1. Don't supply any video signal.
- 2. Connect the scope to TP2001 on the servo section of the main board.
- 3. Place the unit in the REW or FF mode and confirm that the period of waveform becomes 16.6 msec.
- 4. If not, be sure item 2-5-10 is adjusted correctly.

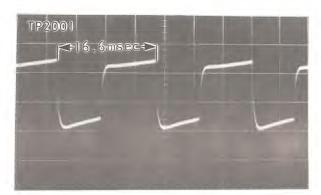


Fig.E12 20mV/Div 5msec/Div

5. Remove the scope.

2-3-2. Switching Pulse (Flip-Flop Duty Cycle) Adjustment

Test Points: TP2004, TP3014 Adjustments: R2013 (PG SHIF B) R2015 (PG SHIF A)

- 1. Connect the jumper between TP3008 and TP3010 on the Luminance section of main board. Use as short a jumper as possible.
- 2. Connect the scope CHI to TP3014 on the Luminance section and CH2 to TP2004 on the Servo section. Use TP2004 as scope trigger.
- 3. Play back the Monoscope section of the alignment tape (VFM8080H6) and set the scope to the CHOP mode. Then expand the switching portion of the envelope.

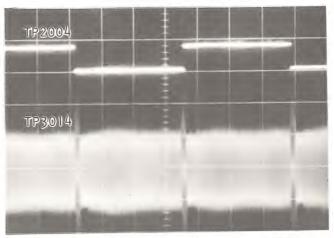


Fig. E13 Up 10V/Div 5msec/Div 5msec/Div

4. Now adjust the PG SHIF A (R2015) on the Servo section to place the rising edge of switching pulse in the center of the over lapped RF signal (Fig. E14)

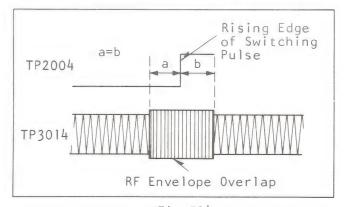


Fig.E14

5. Adjust a PG SHIF B (R2013) on the Servo section so the difference between the leading edge and trailing edge is as shown below. Switch the slope selector on the scope to either + (plus) or - (minus) and adjust for less than lousec difference.

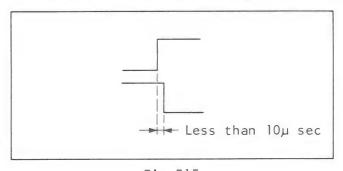


Fig.E15

6. Remove the jumper between TP3008 and TP3010.

2-3-3. Control Head Output Confirmation

Test Point: TP2008

- Supply a video signal to the Video Input on the right side panel or plug in 10 Pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording in the SLP mode for a few minutes.
- 3. Connect the scope to TP2008 on the Servo section.
- 4. Playback the portion just recorded.
- 5. Confirm that the level of positive pulses are more than 0.8V (Fig. E17).

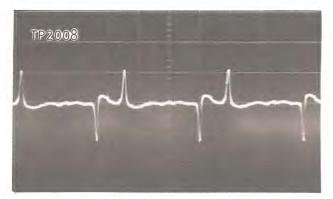


Fig.E16 1V/Div 10msec/Div

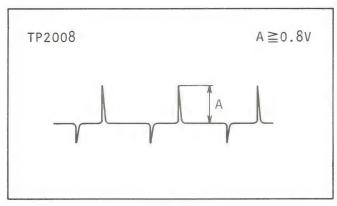


Fig.E17

6. Remove the scope.

2-3-4. Tracking Control Adjustment

Test Points: TP2004, TP2009 Adjustments: R2061 (REC FIX)

R2063 (PB FIX)

- 1. Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- 2. Insert a cassette and make a recording in the SP mode.
- 3. Set the Tracking Control on the front panel to the center detent point.
 Connect the scope CH1 to TP2004 and CH2 to TP2009 on the servo section and expand sweep.
- Use TP2004 for trigger of the scope.
 4. During Recording, adjust the REC FIX (R2061), so the T period becomes 0.4 ± 0.4 msec (Fig. E19).

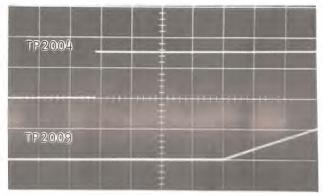


Fig.E18 UP TP2004 5V/Div O.lmsec/Div DOWN TP2009 O.lV/Div O.lmsec/Div

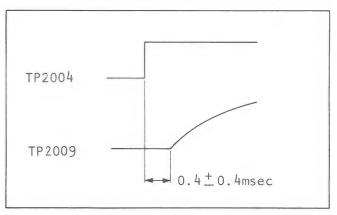


Fig.E19

- 5. Then, make a recording in the SP mode for a few minutes.
- 6. Playback the portion just recorded.
- 7. During playback, adjust the P.B. FIX (R2063), so the T period becomes 0.4 ± 0.4 msec.
- 8. Remove the scope.

2-3-5. Buffer OSC Frequency Adjustment

Test Point: TP2002

Adjustment: R2005 (BUF. OSC)

- 1. Don't supply a video signal.
- 2. Connect the scope to TP2002 on the Servo section.
- 3. Place the unit in the REC mode and adjust the BUF. OSC (R2005) so that the "T" is 17.5 ± 0.25 msec (Fig. E20, E21).

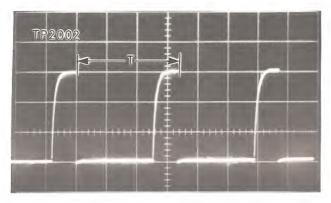


Fig.E20 2V/Div 5msec/Div

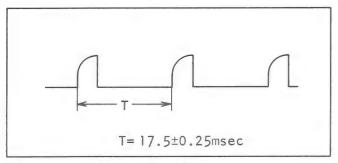


Fig.E21.

- 4. Supply a video signal to the Video Input or plug in 10 pin connector and tune in a local on-air TV program.
- 5. Confirm that the "T" is 16.67 ± 0.02 msec.
- 6. Remove the scope.

2-3-6. Cylinder Servo Sampling Gate Adjustment

Test Points: TP2004, TP2006, TP2007 Adjustment: R2021 (CYL. F.R.)

1. Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.

- Insert a cassette and make a recordind in the SP mode.
- 3. Conn ct the scope CH1 to TP2004 and CH2 to TP2006 on the servo section. Set the scope to the CHOP mode.
- 4. Pre-adjust the CYL. F.R. (R2021) on the same section so the two waveforms are locked (Fig. E22, E23).

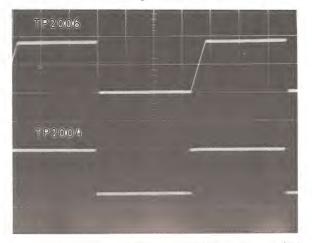


Fig. E22 Up TP2006 5V/Div 5msec/Div Down TP2004 5V/Div 5msec/Div

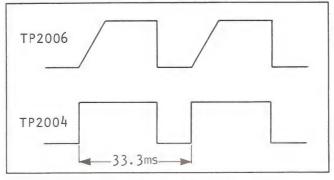


Fig.E23

5. Connect the DVM to TP2007 on the same section.

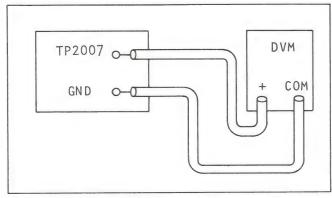


Fig.E24

- 6. Adjust the CYL. F.R. (R2021) so the voltage is 3.5 \pm 0.2 VDC.
- 7. Remove the scope and the DVM.

2-3-7. Capstan Servo Sampling Gate Adjustment

Test Points: TP2009, TP2010, TP2011 Adjustment: R2073 (CAP. F.R.)

- Supply a video signal to Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- 2. Place the unit in SP mode and make a recording.
- Connect the scope CH1 to TP2010 and CH2 to TP2009 on the servo section. Set the scope to the CH0P mode.
- 4. Pre-adjust the CAP. F.R. (R2073) on the same section so the two waveforms are locked (Fig. E25).

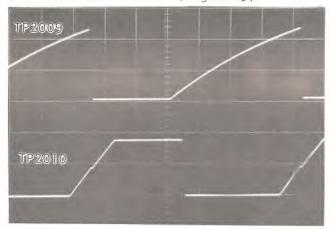


Fig. E25 Up T02009 2V/Div 5msec/Div Down TP2010 5V/Div 5msec/Div

5. Connect the DVM to TP2011 on the same section.

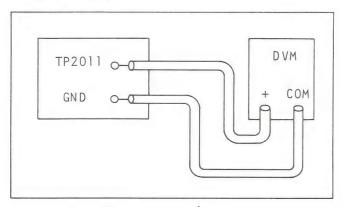


Fig.E26

- 6. Adjust the CAP. F.R. (R2073) so the voltage is 3.5 ± 0.2 VDC.
- 7. Then switch to LP mode. Confirm that the voltage at TP2011 is 3.5 ± 0.5 VDC.
- 8. Then switch to SLP mode.
- 9. Confirm that the voltage at TP2011 is 3.5 ± 0.5 VDC.

2-3-8. HEAD Switching Position Adjustment

Test Points: TP2004, TP3015 Adjustment: R2017 (REC SHIF)

- 1. Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording.
- 3. Connect the scope CH1 to TP2004 on the Servo Section and Ch2 to PT3015 on the Luminance section. Set the scope to the CHOP mode.
- 4. Also set the scope to the Delay mode or expand the vertical interval of the signal from TP3015.
- 5. While recording, adjust the REC SHIF (R2017) so the recording head switching point is 6H ± 1H before the start of vertical sync as shown below.

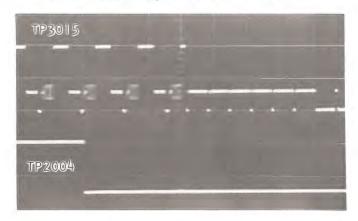


Fig. E27 Up TP3015 1V/Div 5msec/Div Down TP2004 5V/Div 5msec/Div

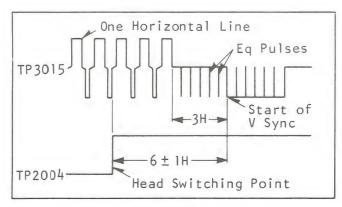


Fig.E28

- 6. Change the slope selector on the scope from "+" to "-" and make sure that the other swithcing point is also 6H ± 1H before the beginning of vertical sync.

 If the tolerance is more or less than 6H ± 1H readjust the switching Flip-Flop Duty Cycle. (Refer to item 2-3-2.)
- 7. Remove the scope.

2-3-9. PG Head Output Confirmation

Test Point: TP2003

- 1. Playback the Monoscope section of alignment tape.
- 2. Connect the scope to TP2003.
- 3. Confirm that the level is as shown below.

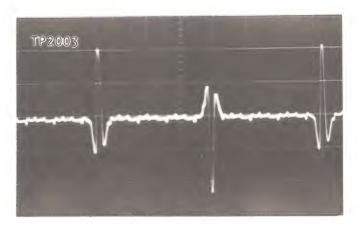


Fig.E29 1V/Div 5msec/Div

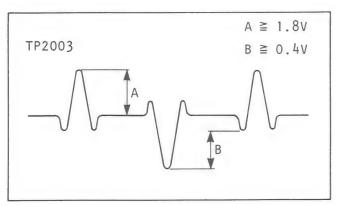


Fig.E30

4. Remove the scope.

2-3-10. Capstan FG Frequency Confirmation

Test Point: Pin 5 of Connector P8

- Cover the supply and takeup photo transistors with two pieces of black paper and place the unit in the FF, REW mode without a tape.
- Connect the frequency counter between pin 5 of connector P8(FG) and pin 4 (GND).
- 3. Confirm that the frequency in the each mode is 1625 ± 50 Hz.
- 4. Then confirm that the frequency in PLA mode is 1440 \pm 40Hz.

2-4. Audio Section

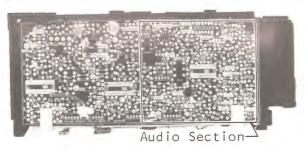


Fig.E31
AUDIO SECTION

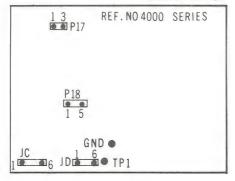


Fig.E32

AUDIO SECTION

C53 P17 REF. NO 4000 SERIES

3.58H
FREQ

C35
BIAS

P18
GAIN
R19

R23
SP
PQL. ADJ

JC
1 6 JD

1 6

Fig.E33

2-4-1. Bias Current Adjustment

Test Point: Audio Head Terminal Adjustment: C4035 (BIAS ADJ)

- 1. Don't supply any audio signal to the MIC JACK on the right side panel and disconnect the 10 pin connector from E-Tuner Unit.
- 2. Insert a cassette and make a recording in the SP mode.
- 3. Connect the DVM as shown below.

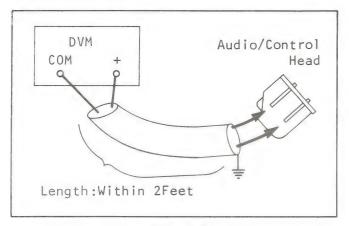


Fig.E34

- 4. Set the DVM to the AC voltage input position.
- 5. While the recording is taking place, adjust the BIAS ADJ (C4035) on the Audio Section so the voltage is 1.2 ± 0.05 mV rms.
- 6. Remove the DVM.

2-4-2. Dummy Coil Adjustment

Test Point: Audio Head Terminal Adjustment: L4004 (Dummy Coil)

- Playback a pre-recorded tape. (Since the Audio signal recorded on the tape will be erased under the following procedure, be sure to use a tape whose audio may be erased.)
- 2. Under the items 1-4 condition in the Bias Current Adjustment (2-4-1) make an audio Dubbing by pressing the Audio Dubbing button during playback.
- 3. Adjust the Dummy Coil (L4004) on the Audio Section so the Audio Head output is 1.2 + 0.05 V rms.
- 4. Remove the DVM.

2-4-3. Playback Gain/Equalizer Adjustment

Test Point: TP4001

Adjustments: R4019 (P.B. GAIN) R4023 (2H EQ)

- 1. Supply a sinewave signal (1 kHz and 5 kHz -80dB 0.28 mVp-p) to the AUDIO
- IN on the Audio section.2. Supply a video signal to the Video
- Input on the right side panel.

 3. Connect the DVM to TP4001 on the Audio section.
- 4. Insert a cassette and make a recording 1 kHz first then 5 kHz signal in the SP mode, record the voltage of 1 kHz.
- 5. Playback the portion just recorded.
- Adjust the P.B. GAIN (R4019) so the voltage of 1 kHz playback is equal to that of recording.
- 7. Adjust the 2H EQ (R4023) so the 1 kHz and 5 kHz outputs are balanced.
- 8. Change the selector from SP to SLP and make a recording same as SP mode.
- 9. Playback the portion just recorded.
- 10. Confirm that the level of 5 kHz is 0.7 \pm 0.1 times than that of 1 kHz.

2-5. Video Section

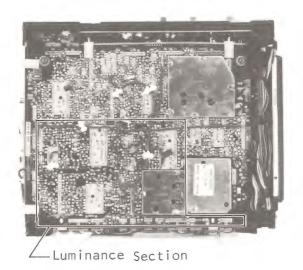


Fig.E35

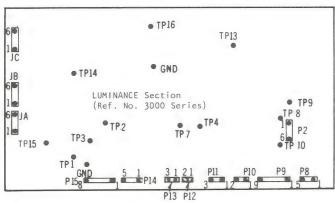


Fig.E36

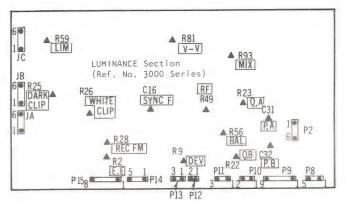


Fig.E37

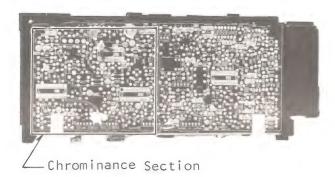


Fig.E38

CHROMINANCE SECTION

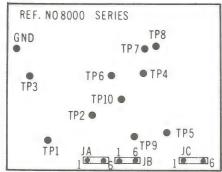


Fig.E39

CHROMINANCE SECTION

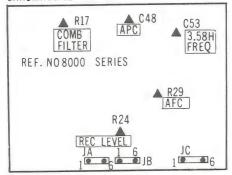


Fig.E40

2-5-1. Head Amp Peak Frequency Adjustment

Test Point: TP8001

Adjustments: C3031 (PEAK-A)

C3032 (PEAK-B)

A. Factory Adjustment

(Using sweep generator)

- 1. Do not supply any video or RF signal on the right side panel.
- 2. Turn controls as follows. (All controls are on the Luminance Section.)

R3056 Center
R3122 Fully Clockwise
R3123 Fully Counter-Clockwise
R3049 Center

- 3. Connect the sweep generator to TP3007 on the Luminance Section.
- 4. Cover the supply and takeup photo transistors with two pieces of black paper and place the unit in the PLAY mode without a tape.
- 5. Adjust the level of sweep generator to 200 + 50 mVp-p at TP8001.
- 6. Adjust the PEAK-A (C3031) and the PEAK-B (C3032) so the peaks on the scope are $4.5~\text{MHz} \pm 0.1~\text{MHz}$.
- 7. Remove the sweep generator and the scope.

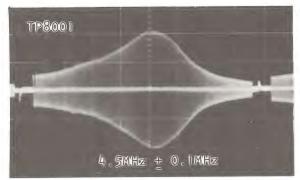


Fig. E41 50mV/Div 2msec/Div

B. Field Adjustment

(Using sinewave generator)

- Do not supply any video or RF signal on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- Turn the controls as follows. (All controls are on the Luminance Section)

R3056	Contor
K3U50	Center

R3122 Fully Clockwise

R3123 Fully Counter-Clockwise

R3049 Center

- 3. Connect the sinewave generator to TP3007 on the Luminance Section.
- 4. Connect the scope to TP8001.
- 5. Cover the supply and takeup photo transistors with two pieces of black paper and place the unit in the PLAY mode without a tape.
- 6. Adjust the frequency of sinewave generator to $4.7 \pm 0.1 \, \mathrm{MHz}$.
- 7. Adjust the level of sinewave generator to 200 ± 50 mVp-p at TP8001.
- 8. Adjust the PEAK-A (C3031) and the PEAK-B (C3032) so the amplitude on the scope becomes maximum.

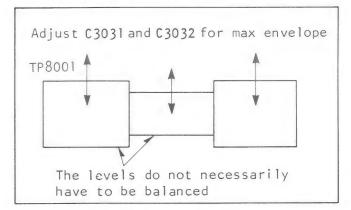


Fig.E42

- 9. Remove the sinewave generator and the scope.
- 2-5-2. Head Amp Frequency Response and Balance Adjustment

Test Point: TP8001, TP3008 Adjustments: R3122 (Q-B)

R3123 (Q-A) R3056 (BAL)

- A. Factory Adjustment
 (Using sweep generator)
- 1. Supply the V sync from the sweep generator to the Video Input on the right side panel.
- 2. Connect jumper between TP3003 and GND to prevent the video signal except composite sync from being applied to the following circuits.
- 3. Connect the sweep generator to TP3004.
 - Put the markers on 2 MHz, 3.4 MHz and 4.5 MHz.
- 4. Set the wiper of RF LEVEL Control R3049 to the center position.

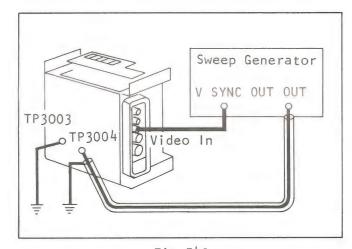


Fig.E43

- 5. Connect the scope between TP3008 (HOT) and TP3009 (GND).
- 6. Insert a cassette and make a recording in the SP mode for a few minutes.
- 7. Adjust the level of the sweep generator to 120 mVp-p at 3.4 MHz.

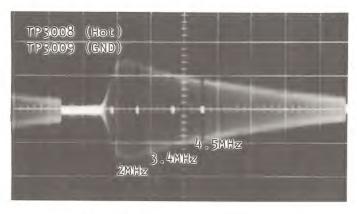


Fig.E44 50mV/Div 5msec/Div

- 8. Playback the portion just recorded.
- 9. Connect the scope to TP8001.

 Trigger the scope from TP2004.
- 10. Connect a jumper between TP3008 and GND.
- 11. Adjust the Q-B (R3122) so the levels at 2 MHz and 4.5 MHz are balanced.
- 12. Change the jumper from TP3008 to TP3010.

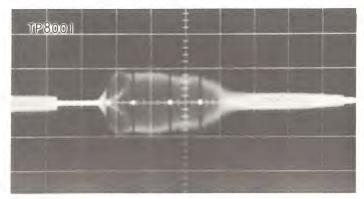


Fig.E45 0.2V/Div 5msec/Div

- 13. Adjust the Q-A (R3123) so the levels at 2 MHz and 4.5 MHz are balanced.
- 14. Remove the jumper from TP3010.
- 15. Then adjust the MIX (R3056) so that both channel outputs are balanced.
- B. Field Adjustment

(Using sinewave generator)

 Supply a video signal to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program for Servo control of the unit.

Note: Monochrome signal is best to use.

- Connect jumper between TP3013 and GND to prevent the video signal except composite sync from being applied to the following circuits.
- 3. Connect the sinewave generator to TP3004.
- 4. Set the wiper of the RF Level (R3049) to the center position.
- 5. Set the frequency of the sinewave generator to 3.4 MHz.
- 6. Connect the scope between TP3008 (HOT) and TP3009 (GND).
- Insert a cassette, and make a recording in the SLP mode for a few minutes.
- 8. Adjust the output level of the sinewave generator so that the peak-to peak level at TP3008 is 120 mVp-p.

- 9. Change the frequency of the sinewave generator from 3.4 MHz to 2.0 MHz and make a recording for about 10 seconds.
- 10. Then, change the frequency from 2.0 MHz to 4.5 MHz and make a recording for about 10 seconds.
- 11. Repeat above steps 9 and 10 a couple of times. Remove jumper between TP3003 and GND.
- 12. Playback the portion just recorded.
- 13. Connect the scope to TP8001.
 Trigger the scope from TP2004.
- 14. Connect a jumper between TP3008 and GND.
- 15. Adjust the Q-B (R3122) so the levels at 2 MHz and 4.5 MHz are balanced.
- 16. Change the jumper from TP3008 to TP3010.
- 17. Adjust the Q-A (R3123) so the levels at 2 MHz and 4.5 MHz are balanced.
- 18. Remove the jumper from TP3010.
- 19. Adjust the MIX (R3056) so the both channel outputs are balanced.
- 20. Do adjustment step 2-5-7 for R3049.

2-5-3. E-E Level Adjustment

Test Point: TP3015

Adjustment: R3002 (E-E LEVEL)

- Supply a video signal (1 Vp-p) to the Video Input on the right side panel or plug in 10 pin connector and tune in a local on-air TV program.
- 2. Connect the scope to TP3015.
- 3. Place the unit in STOP mode.
- 4. Adjust the E-E level ADJ (R3002) on the Luminance Section so the video level is 2.0 ± 0.1 Vp-p.

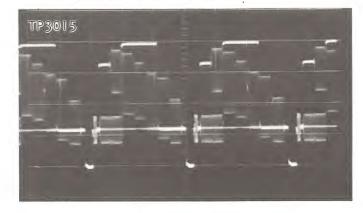


Fig.E46 0.5V/Div 20µsec/Div

2-5-4. Sync Tip Frequency and Diviation Adjustments.

Test Point: Pin 23 of IC3003 Adjustments: C3016 (SYNC TIP FREQ) R3009 (DEV)

- 1. Don't supply any video signal.
- 2. Connect the frequency counter to TP3003.
- Insert a cassette and place the unit in Rec mode.
- 4. Adjust the SYNC TIP FREQ (C3016) so the frequency is 3.40MHz + 30KHz.
- 5. Connect a jumper between Pin 3 of IC3003 and Pin 6 of Connector P4 on the main board in order to keep the modulator and demodulator turned on at all times.
- 6. Connect a signal generator (sinewave) to TP3014 through a 1 $k\Omega$ resistor and a 0.01 μF (or 0.047 $\mu F)$ capacitor.
- 7. Connect 0.01 μF (or 0.047 $\mu\text{F}) capacitor between TP3003 and TP3014 on the luminance section.$

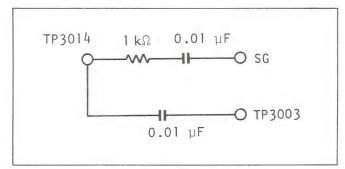


Fig.E47

- 8. Prior to this adjustment, turn the W CLIP (R3026) and the D CLIP (R3025) center position.
- Supply a NTSC Color bar (Split field) signal to Video Input on the right side panel.
- 10. Connect the scope to Pin 23 of IC3003 on the Luminance section.

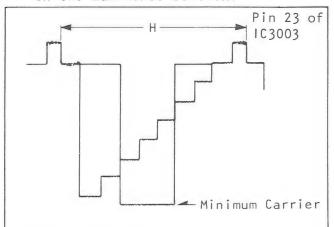


Fig.E48

- 11. Set the frequency of the signal generator to 3.4 MHz + 30kHz.
- 12. Adjust the DVE (R3009) for minimum carrier at peak white.
- 13. Remove the jumpers, resistors and capacitors.
- 14. Connect the scope CH1 to TP3015.
- 15. Place instrument in SP RECORD mode and make a recording.
- 16. Playback the portion just recorded.
- 17. Confirm that the video level is 2 Vp-p + 1 V.
- 18. Make white and dark clip adjustment.

2-5-5. White and Dark Clip Adjustment

Test Point: TP3002 Adjustments: R3025 (D CLIP) R3026 (W CLIP)

- Supply a color bar signal to the Video Input on the right side panel.
- Connect the scope to TP3002 on the Luminance Section.
 Set the scope to 2 V/Div, 10 msec/
- Place the unit in the SLP RECORD mode.
- 4. Adjust the W CLIP (R3026) and the D CLIP (R3025) on the same section so the overshoot and undershoot are as shown below.

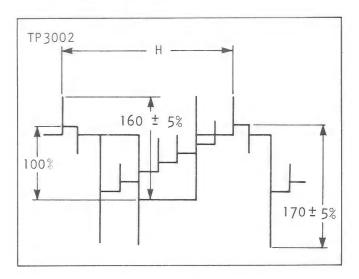


Fig.E49

2-5-6. Recording Current Adjustment

Test Points: TP3008

TP3009

Adjustments: R3028 (REC CURR)

R8024 (REC CHROMA)

- 1. Supply a NTSC color bar signal to the Video Input or plug in 10 pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording in the SP mode for a few minutes.
- 3. Connect the scope between TP3008 (HOT) and TP3009 (GND) on the Luminance Section. External trigger to TP8005.
- 4. Turn the REC CURR (R3028) fully counter clockwise.
- 5. Adjust the REC CHROMA (R8024) on the Chrominance section so the level of cyan portion is 32 ± 1 mVp-p.

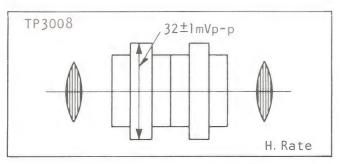


Fig.E50

- 6. External trigger to TP2002.
- 7. Then slowly turn the REC CURR (R3028) on the Luminance Section so that the V sync portion of the envelope at TP3008 is 120mV ± 10mVp-p.

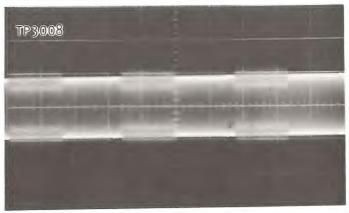


Fig.E51 50mV/Div 5msec/Div

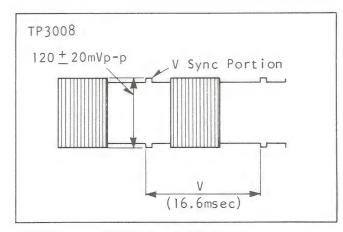


Fig. E52

2-5-7. Dropout Detector Input Level Adjustment

Test Point: TP3014

Adjustment: R3049 (RF LEVEL)

- Supply a video signal to the Video Input on the right side panel or plug in 10 Pin connector and tune in a local on-air TV program.
- Insert a cassette and make a recording in SP mode for a few minutes.
- 3. Playback the portion just recorded.
- 4. Connect the scope to TP3014 on the Luminance section.
- 5. Adjust the RF Level (R3049) so the level is $800 \pm 30 \text{ mVp-p}$.

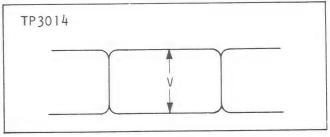


Fig.E53

2-5-8. Limiter Balance Adjustment

Test Point: TP3015

Adjustment: R3059 (LIM BAL)

- Supply a stair step signal to the Video Input on the right side panel or plug in 10 Pin connector and turn in a local on-air TV program.
- Place the unit in the LP mode and make a recording for a few minutets.
- 3. Playback the portion just recorded.
- 4. Turn the Tracking Control on the front panel for the poorest tracking. (Worst playback image.)
- 5. During playback, adjust the LIM BAL (R3059) on the Luminance section for minimum noise on the TV screen.

2-5-9. Low Frequency Noise Canceller Adjustment

Test Point: TP3013

Adjustment: R3093 (MIX LEVEL)

- 1. Supply a color bar signal to the Video Input on the right side panel.
- Place the unit in the SLP mode and make a recording for a few minutes.
- 3. Playback the portion just recorded.
- 4. Connect the scope to TP3013 on the Luminance Section.
- 5. During playback adjust the MIX LEVEL (R3093) so the width (W) of signal on TP3013 becomes minimum.

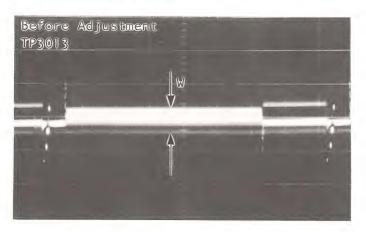


Fig.E54 1V/Div 2msec/Div

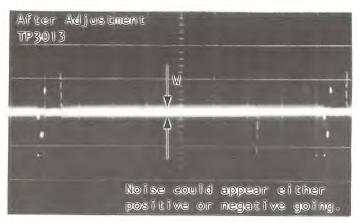


Fig.E55 1V/Div 2msec/Div

2-5-10. 3.58 MHz Crystal Oscillator Adjustment

Test Point: TP8008

Adjustment: C8053 (FREQ ADJ)

- 1. Playback the color bar section of alignment tape.
- 2. Connect the frequency counter to TP 8008 on the Chrominance Section.
- 3. Adjust the FREQ ADJ (C8053) so the frequency at TP8008 is 3.579545 MHz ± 10 Hz.

2-5-11. AFC Adjustment

Test Point: TP 8005 Adjustment: R8029 (AFC)

- Don't supply any video signal to the Video Input of the right side panel.
- Insert a cassette and make a recording for a few minutes.
- 3. Connect the frequency counter to TP8005 on the chrominance section.
- 4. Adjust the AFC (R8029) on the chrominance section so the frequency is 15.634 kHz ± 50Hz.

2-5-12. APC 3.58 MHz VXO Adjustment

Test Point: TP8007 Adjustment: C8048 (APC)

- 1. Connect a jumper between TP8003 and GND.
- 2. Connect a 18k Ω resistor between TP 8004 and GND.
- 3. Connect a $39k\Omega$ resistor between TP 8006 and GND.
- 4. Place the unit in STOP mode.
- 5. Connect the frequency counter to TP8007.
- 6. Adjust the APC (C8048) so the frequency is 3.579545 MHz ± 50 Hz.
- 7. Remove the resistors.

2-5-13. Comb Filter Adjustment

Test Point: TP3015 Adjustment: R8017 (MIX)

- Supply a color bar signal to the Video Input on the right side panel.
- 2. Place the unit in the RECORD mode and make a recording in the SLP mode.
- 3. Connect the scope to TP3015 on the Luminance section.
- 4. Playback the portion just recorded.
- Turn the Tracking Control on the front panel for the poor tracking. (Picture has some noise)
- 6. During playback, adjust the MIX (R8017) on the Chrominance section as shown below.
- Place tracking control back into detent position. (Best picture)

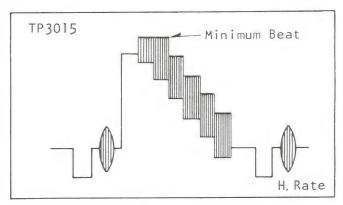


Fig.E56

2-5-14. Video/Chroma Level Adjustment

Test Point: TP3015

Adjustment: R3081 (P.B. LEVEL)

- 1. Supply a colour bar signal to the Video Input on the right side panel.
- 2. Insert a cassette and make a recording in the SP mode for a few minutes.
- 3. Connect the scope to TP3015 on the Luminance section.
- 4. Playback the portion just recorded.
- 5. During playback, adjust the P.B. LEVEL (R3081) so the video level is 2.0 \pm 0.1 Vp-p.
- 6. Then confirm that the chroma level of cyan portion is 1.1 ± 0.2 Vp-p.

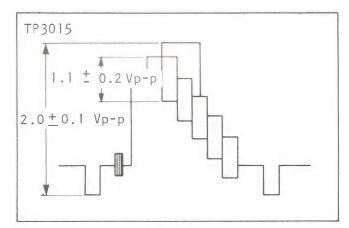


Fig.E57

2-6. Slow/Still Section

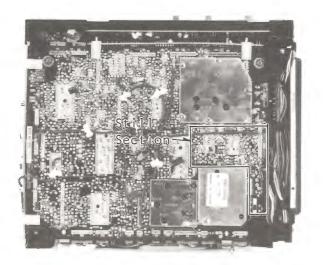


Fig.E58

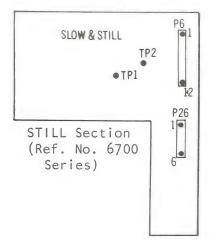


Fig.E59

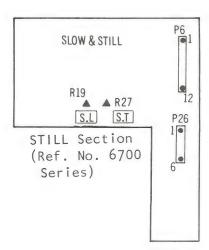


Fig.E60

2-6-1. Capstan Drive Pulse and SLOW Speed Adjustment

Test Points: TP2701 TP2702

Adjustments: R2719 (SLOW) R2718 (STILL)

1. Supply a video signal to the Video Input on the right side panel or plug in 10 Pin connector and tune in a local on-air

TV program.

2. Insert a cassette and make a recording in the SLP mode for a few minutes.

- 3. Playback the portion just recorded. Push the PAUSE/STILL key and hold the frame advance button down.
- 4. Connect the scope to TP2701 on the still section.

External trigger to TP2004.

5. Adjust the S.L. (R2719) so that the T portion is 15.0 msec. ± 0.2 msec.

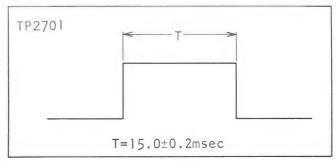


Fig.E61

- 6. Change the scope from TP2701 to TP2702 on the same section.
- 7. Adjust the S.T. (R2718) so that the T portion is 6.0 msec. ± 0.2 msec.

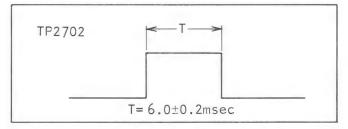


Fig. E62

* Replacement of RF Converter

To remove the RF converter, the following steps are required first.

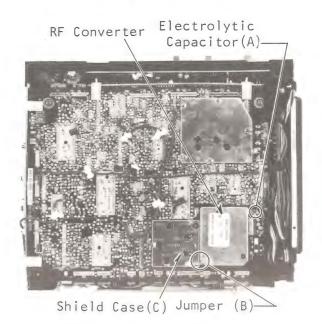


Fig.E63

- 1. Remove the electrolytic capacitor (A) from the board.
- 2. Remove the jumper (B) which is soldered on shield cases.
- 3. Remove the shield case (C) which is used for covering the Head Amp portion.

Then proceed with following steps.

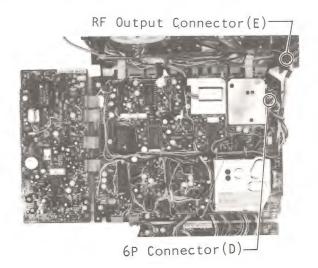


Fig.E64

- 4. Disconnect the 6P connector (D).
- 5. Disconnect the RF output connector (E).

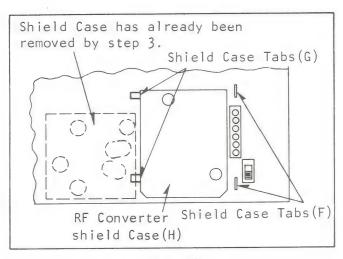
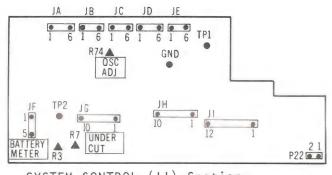


Fig.E65

- Unsolder the shield case tabs (F) until they move back and forth smoothly. Do not try to remove the RF Converter board because shield case tabs (G) are still soldered.
- 7. Alternately heat up the shield case tabs (G) and press the RF Converter Shield Case (H) and pull out the RF Converter board rightward.
- 8. Reverse above steps for installation of new RF Converter board.

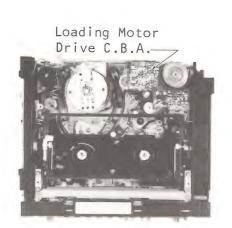
System Control C.B.A. VEPS1026A1 SYSTEM CONTROL (I) Section (Ref. No. 6000 Series) System Control I Section II Section JA JB JC JD JE I 6 1 6 1 6 1 6 1 6 1 6 1 6 1 7 11



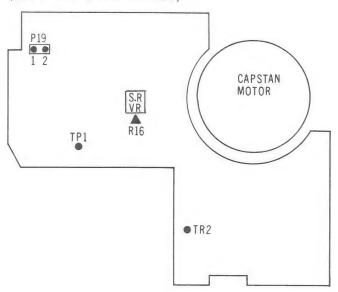
SYSTEM CONTROL (II) Section (Ref. No. 6200 Series)

Loading Motor Drive C.B.A.

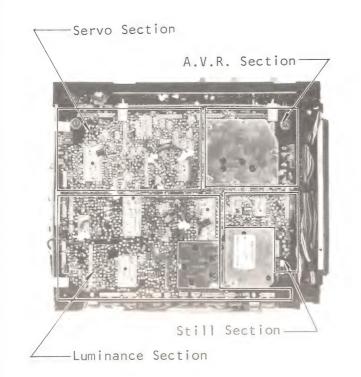
VEPS0635A

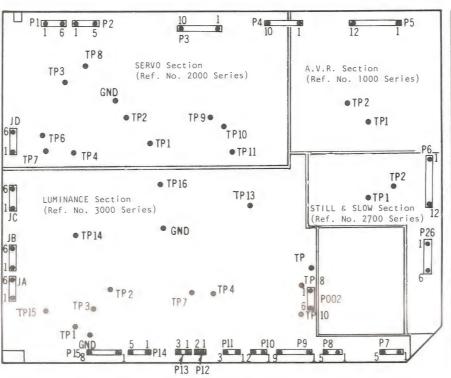


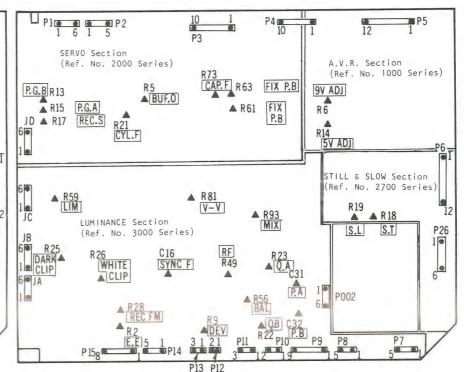
LOADING MOTOR DRTVE Section (Ref. No. 6400 Series)



Main C.B.A. VEPS0312A

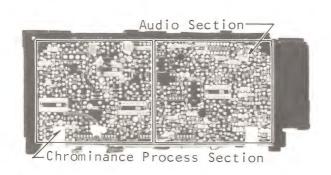


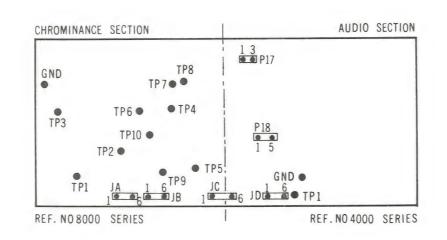


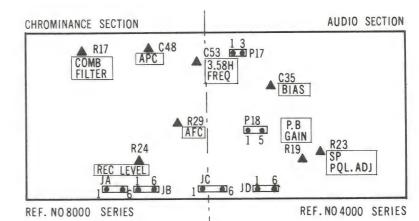


Chrominance Process & Audio C.B.A.

VEPS0803A







Service Mar Portable Video Cassette Recorder

Vol. 3

Block Diagrams



SPECIFICATIONS

Power Source:

Battery LCR-1812P

Elec. Tuner Unit PV-A32E Prog. Tuner Unit PV-A35P (Not available independently) Multiple AC Adaptor PV-A40

Power Consumption: Television System:

Approx. 9.4W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

1 track

Tape Format:

Tape width 1/2" (12.7 mm), high density

tape

Tape Speed:

SP mode: 1-5/16 i.p.s (33.35 mm/s) LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: 1 (SP), 2 (LP) or 3 (SLP) hours

with NV-T60 2 (SP), 4 (LP) or 6 (SLP) hours

FF/REW Time:

with NV-T120 Less than 6 min. with NV-T120

Video: 2 Rotary heads Heads:

Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Input Level:

Video: VIDEO IN Jack (RCA type) $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,

 75Ω unbalanced PV-A32E

UHF Input: UHF Ch14-Ch83, or

PV-A35P 300Ω balanced

Video: VIDEO OUT Jack (RCA type) Output Level:

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}, 600 \, \Omega$ unbalanced RF Modulated: Ch3/Ch4 switchable,

> 72 dB μ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz~8kHz, (10dB down) LP: 100Hz~6kHz. SLP: 150 Hz~5kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB LP mode: better than 40dB

SLP mode: better than 40 dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB LP mode: better than 40dB

SLP mode: better than 40 dB

Operating

Temperature: 32°F-104°F (0°C-40°C)

10%-75% Operating Humidity:

13.5 lbs (6.1 kg) (with battery) Weight: $12\,''(W) \times 4\text{-}1/2\,''(H) \times 9\text{-}11/16\,''(D)$ Dimensions: 304(W) ×114(H) ×245(D) mm

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic

Panasonic Company Division of Matsushita Electric Corporation of America One Panasonic Way, Secaucus, New Jersey 07094

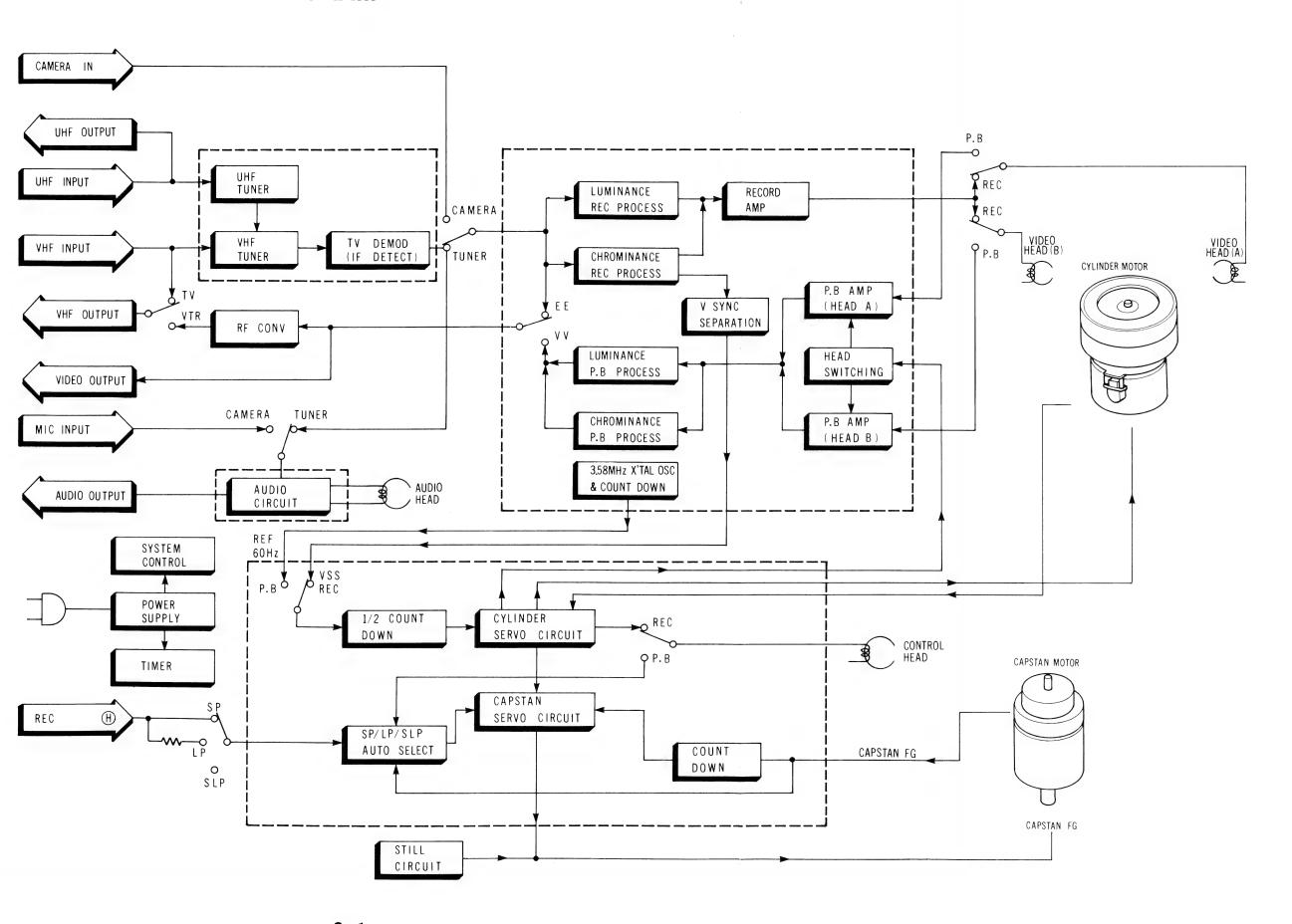
Panasonic Hawaii, Inc. 320 Waiakamilo Road, Honolulu, Hawaii 96817

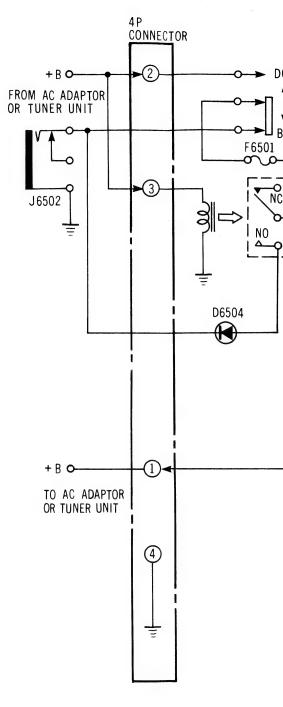
Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

CONTENTS

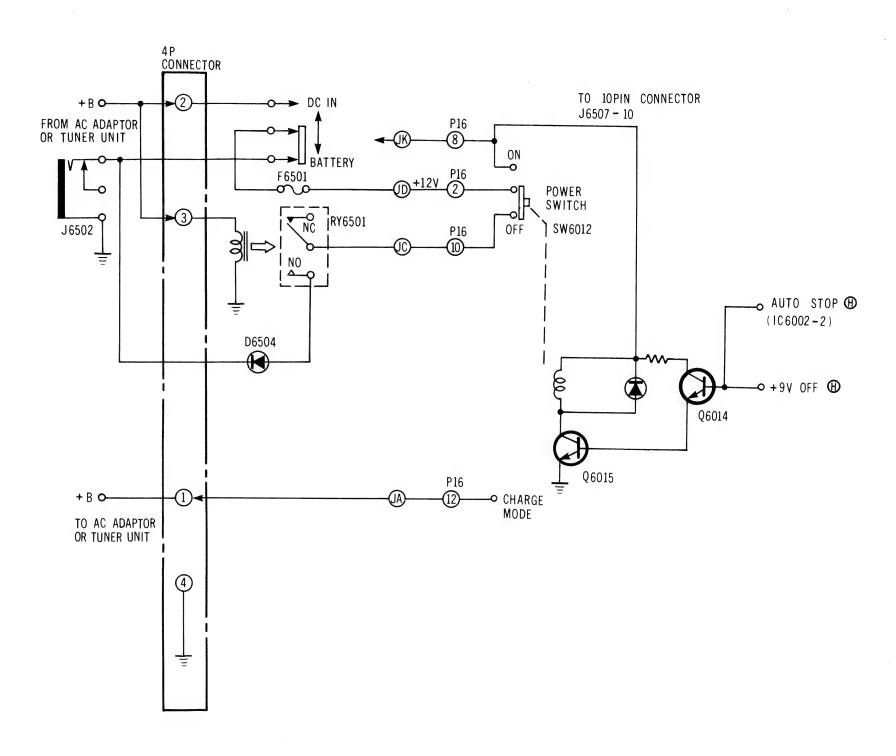
OVERALL BLOCK DIAGRAM 3	s – 1
+B POWER SUPPLY BLOCK DIAGRAM	3- 1
KEY MARTIX CIRCUIT BLOCK DIAGRAM	}- 2
LED DRIVE BLOCK DIAGRAM	}- 3
SAFETY DEVICE BLOCK DIAGRAM	3- 4
REMOTE CONTROLLER / (CAMERA) REMOTE BLOCK DIAGRAM 3)- 5
CYLINDER SERVO BLOCK DIAGRAM	3- 6
CAPSTAN SERVO BLOCK DIAGRAM	3- 7
LUMINANCE PROCESS BLOCK DIAGRAM 3	- 8
CHROMINANCE PROCESS BLOCK DIAGRAM	
STILL BLOCK DIAGRAM 3	3- 9
AUDIO BLOCK DIAGRAM 3	3-10
RF CONVERTER BLOCK DIAGRAM	3-10





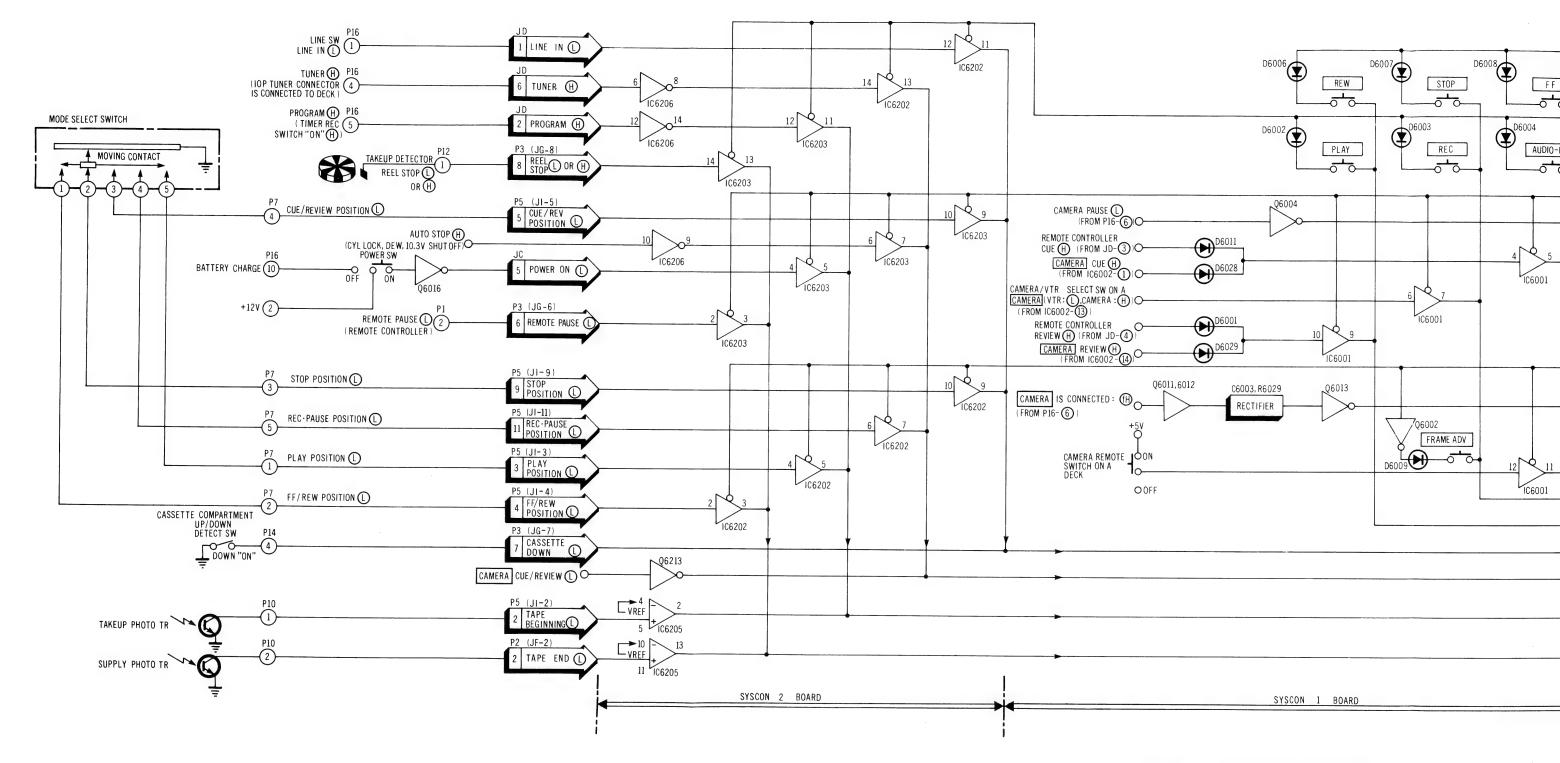
P.B REC UMINANCE RECORD EC PROCESS AMP ¥ REC HROMINANCE CYLINDER MOTOR EC PROCESS P.B AMP (8) V SYNC (HEAD A) SEPARATION HEAD B PROCESS SWITCHING HROMINANCE P.B AMP B PROCESS (HEAD B) 58MHz X'TAL OSC COUNT DOWN REC QP.B CAPSTAN MOTOR COUNT CAPSTAN FG DOWNCAPSTAN FG

B+ POWER SUPPLY BLOCK DIAGRAM

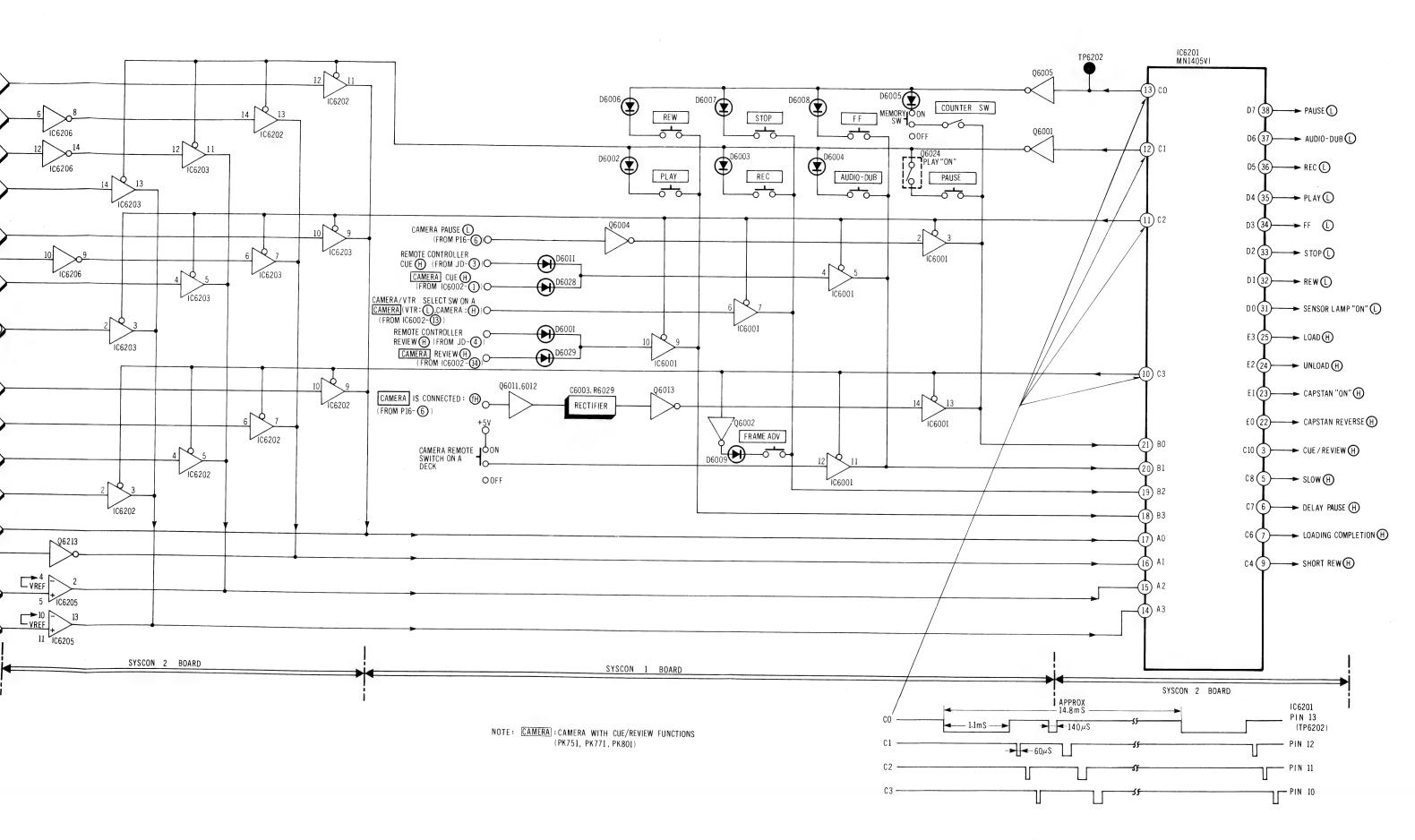


3-2 MATRIX CIRCUIT

KEY MATRIX CIRCUIT BLOCK DIAGRAM



NOTE: CAMERA WITH CUE/REVIEW FUNCTIONS (PK751, PK771, PK801)



C. OUTPUT PORTS → A, B INPUT PORTS MATRIX (MN1405VI)

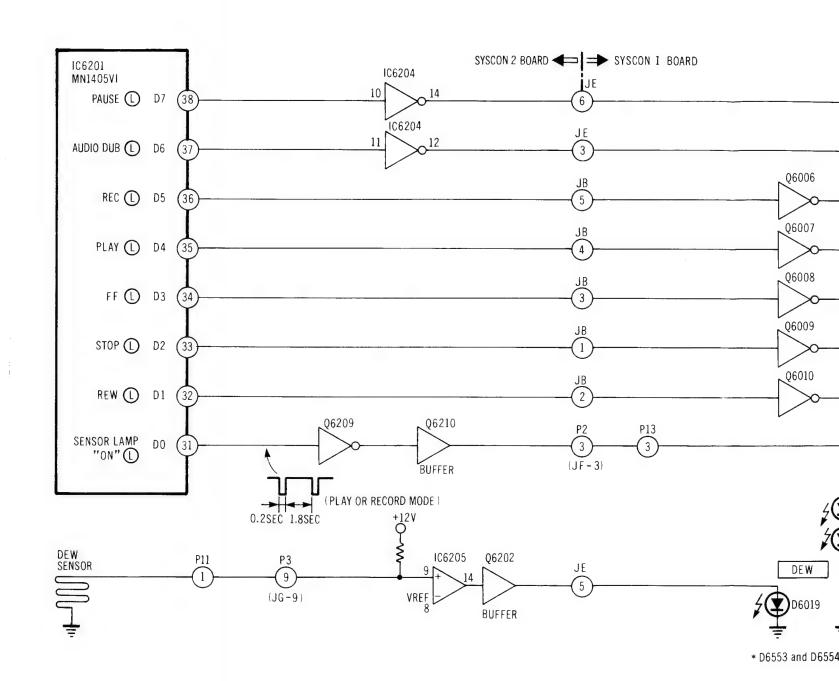
OUTPUT	AO	A1	A2	A3
СО	CASSETTE COMPARTMENT UP/DOWN DETECT	CAMERA CUE/REVIEW DETECT	TAKEUP PHOTO TRANSISTOR	SUPPLY PHOTO TRANSISTOR
C1	LINE IN	TUNER (TUNER UNIT IS CONNECTED TO DECK)	PROGRAM (TIMER RECORD SWITCH "ON")	REEL SENSOR (TAKEUP DETECTOR)
C2	CUE/REVIEW POSITION	AUTO STOP (CYLINDER LOCK DEW 10.3V SHUT OFF)	POWER SWITCH "ON"	REMOTE PAUSE (REMOTE CONTROLLER)
СЗ	STOP POSITION	REC • PAUSE POSITION	PLAY POSITION	FF/REW POSITION

OUTPUT	ВО	В1	B2	В3
со	COUNTER MEMORY (9999 "ON")	FAST FORWARD KEY	STOP KEY	REWIND KEY
C1	PAUSE KEY	AUDIO-DUB KEY	RECORD KEY	PLAY KEY
C2	CAMERA OR CAMERA PAUSE	CUE (REMOTE CONTROLLER OR CAMERA)	CAMERA/VTR SELECT SWITCH ON CAMERA	REVIEW (REMOTE CONTROLLER OR CAMERA)
СЗ	CAMERA CONNECTION	CAMERA REMOTE CONTROL SWITCH ON DECK	FRAME-ADV KEY	

NOTE: CAMERA WITH CUE/REVIEW FUNCTIONS (PK-751, PK-771, PK-801).

3—3

LED DRIVE BLOCK DIAGRAM



LED DRIVE BLOCK DIAGRAM

/1)

А3

PPLY PHOTO RANSISTOR

EL SENSOR EUP CTOR)

MOTE PAUSE DTE ROLLER)

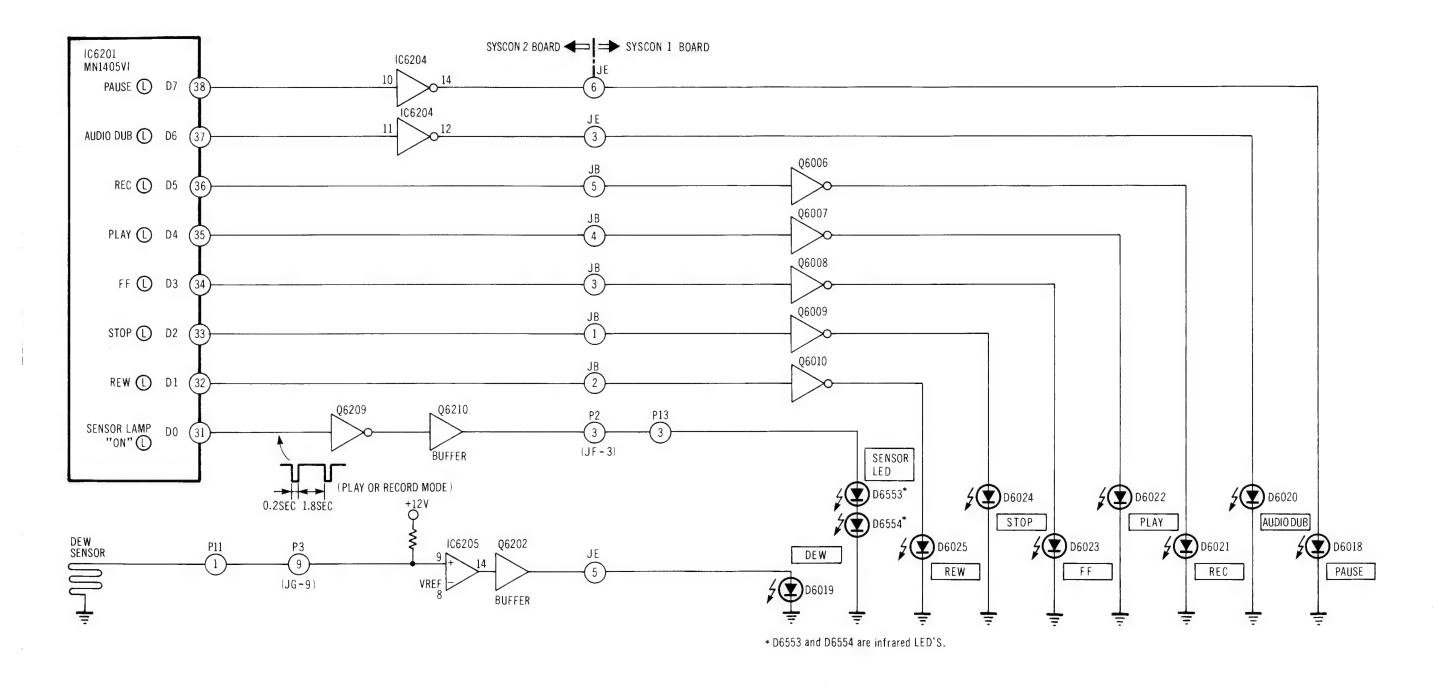
F/REW POSITION

В3

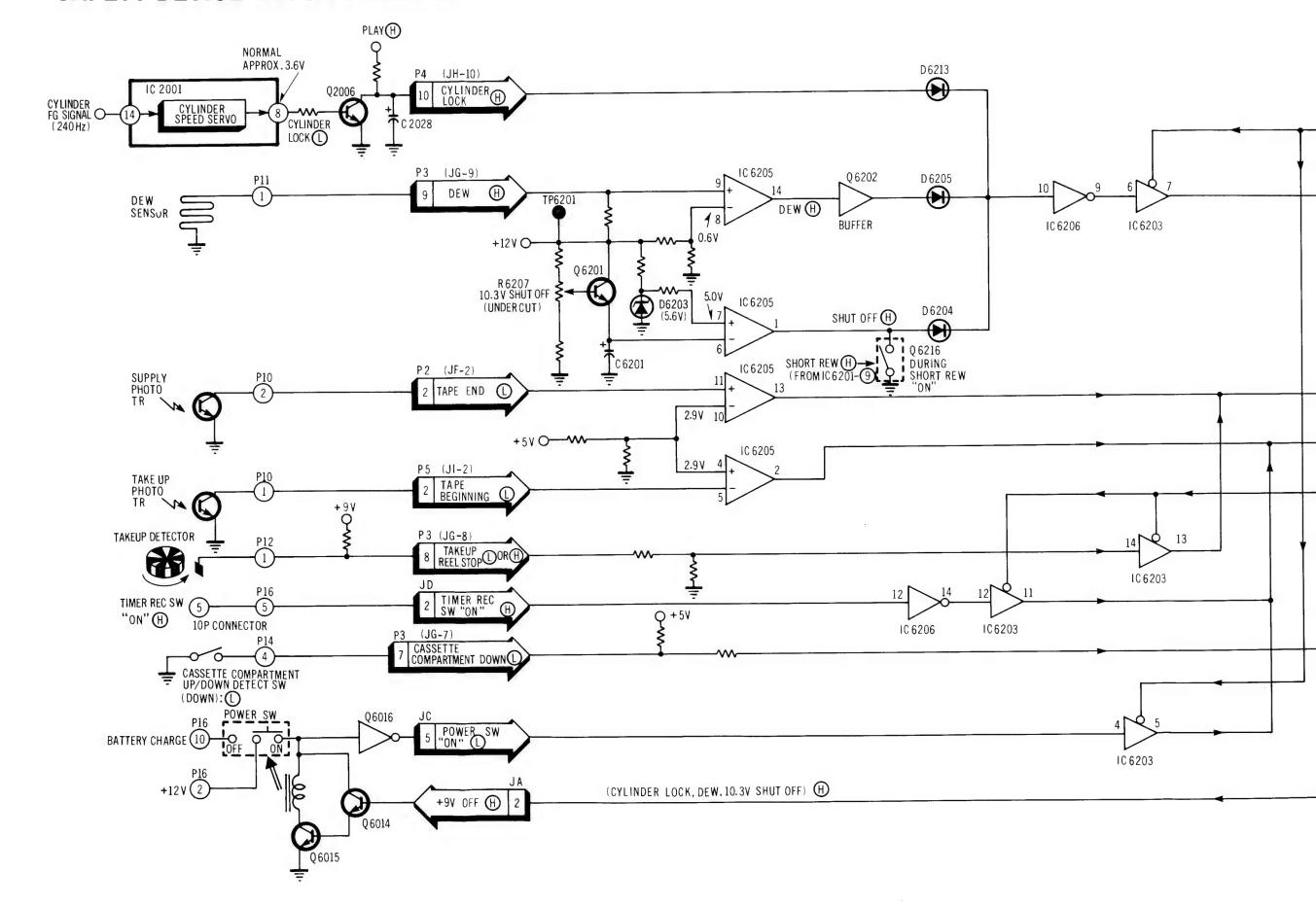
REWIND KEY

PLAY KEY

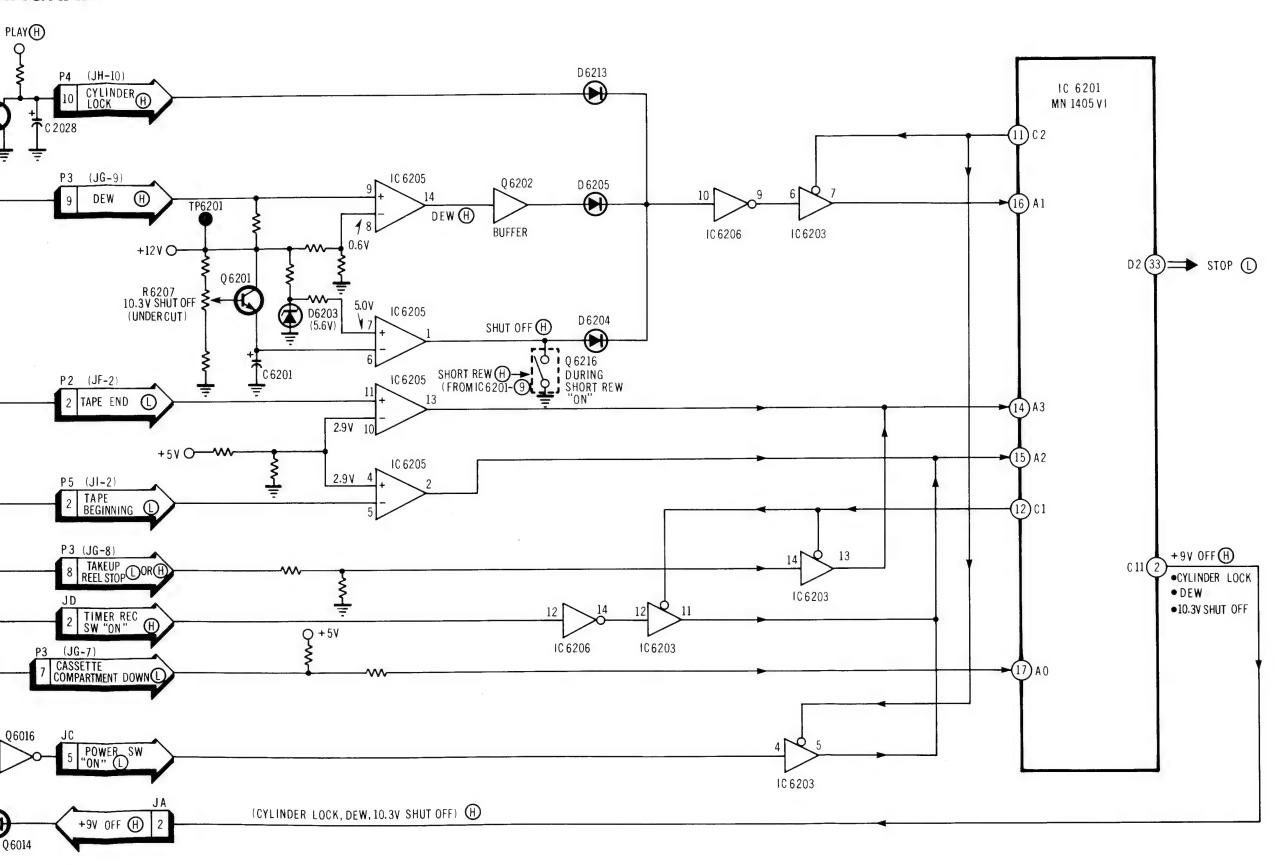
REVIEW OTE ROLLER OR ERA)



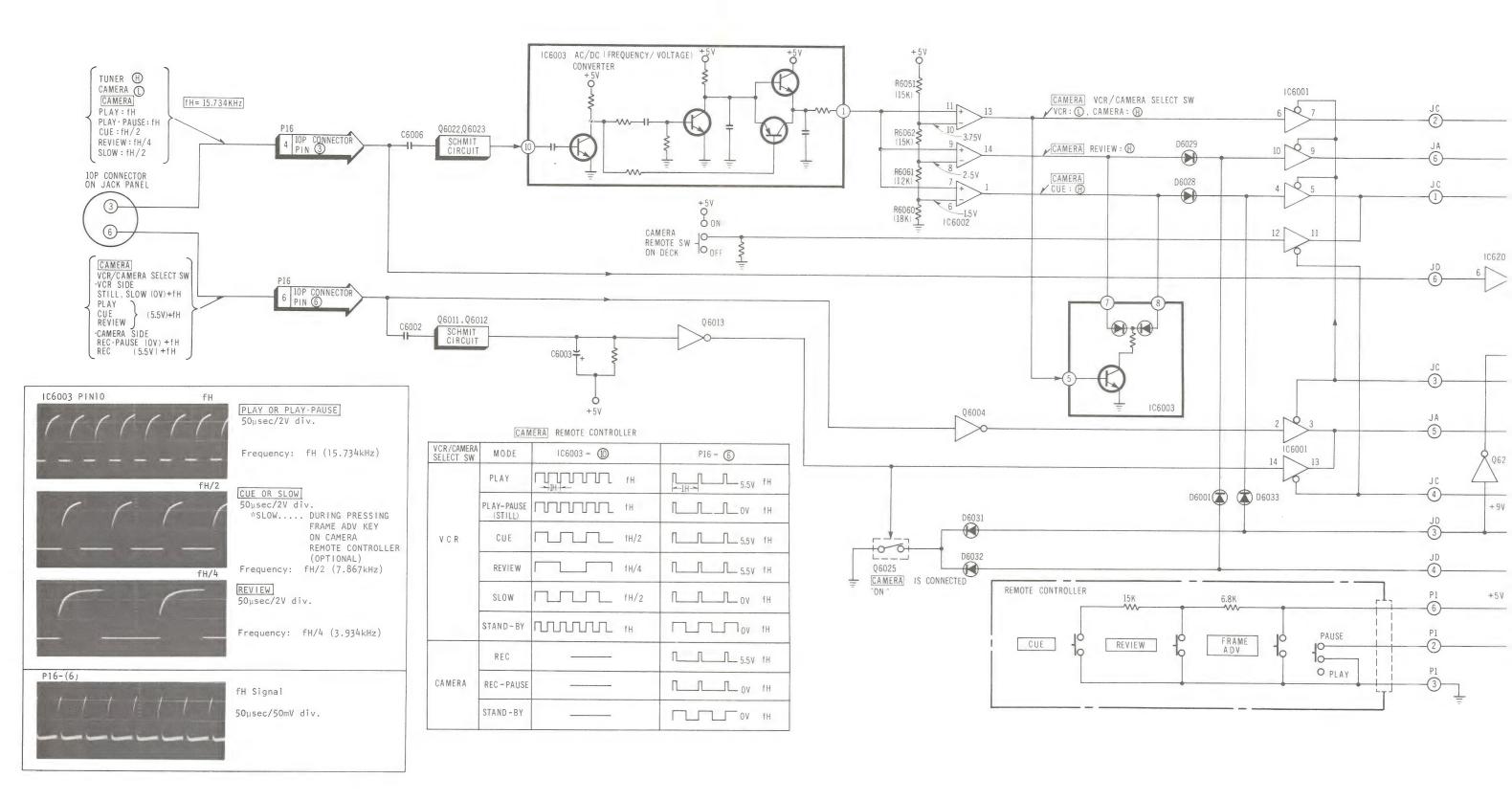
SAFETY DEVICE BLOCK DIAGRAM



IAGRAM

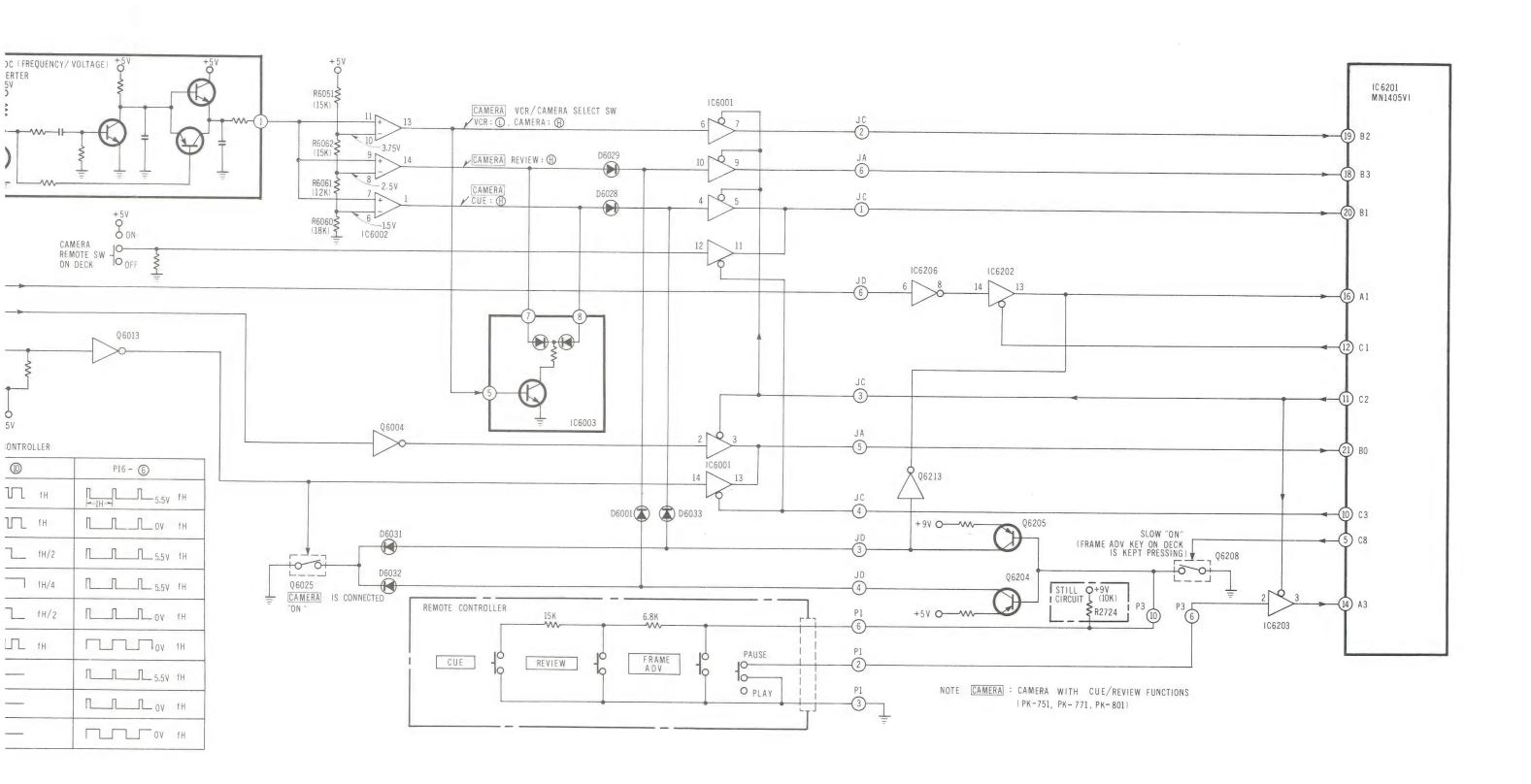


REMOTE CONTROLLER / CAMERA REMOTE BLOCK DIAGRAM

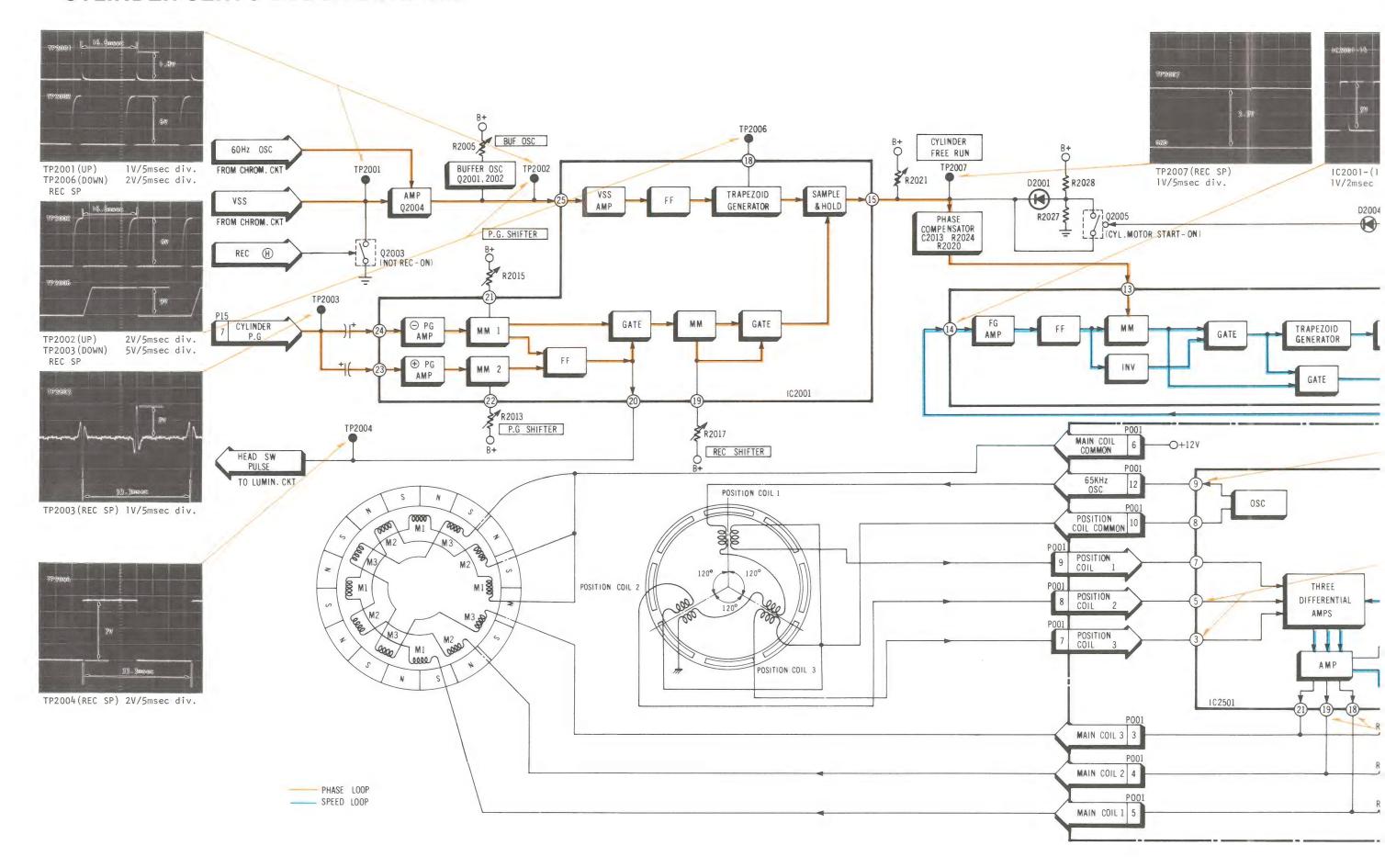


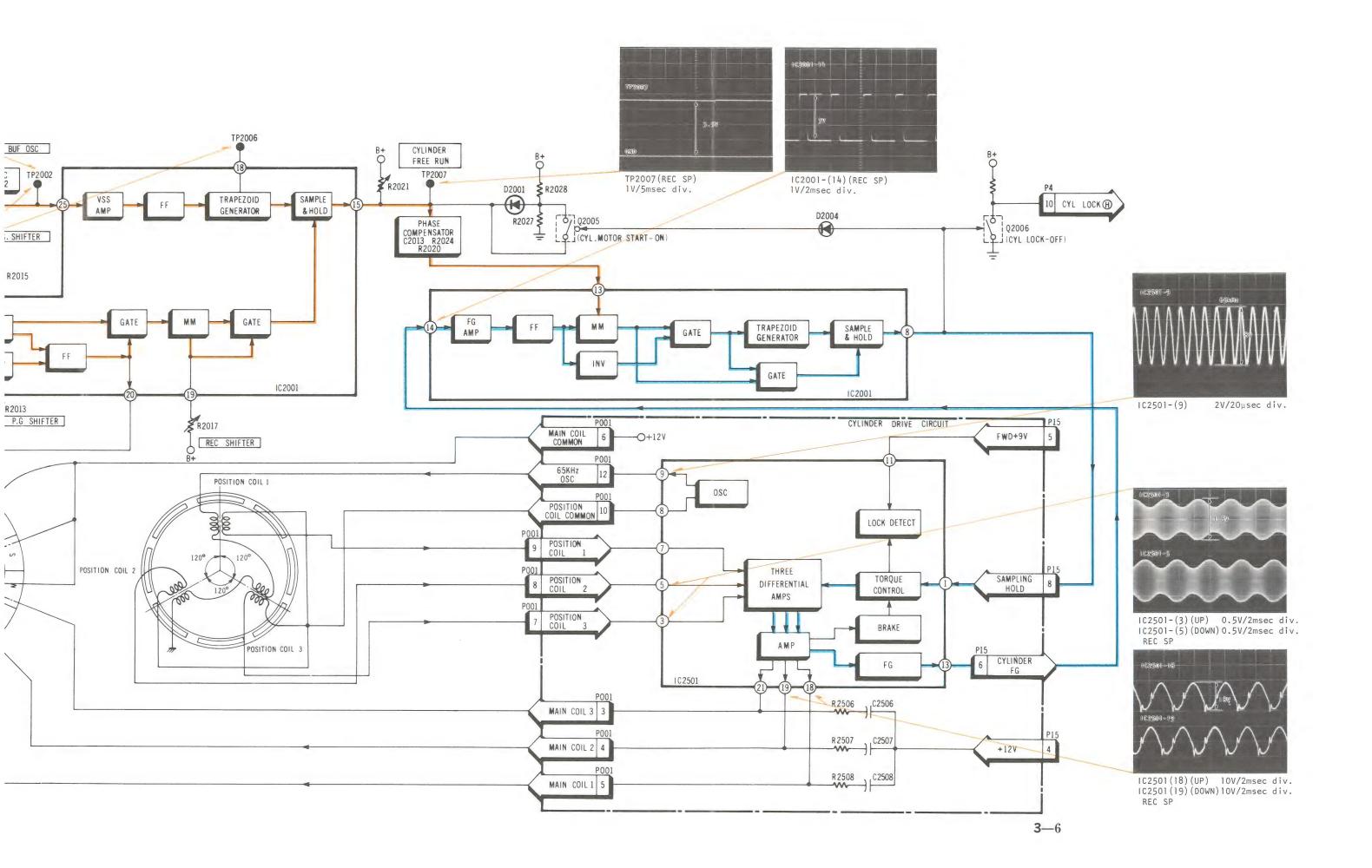
BLOCK DIAGRAM



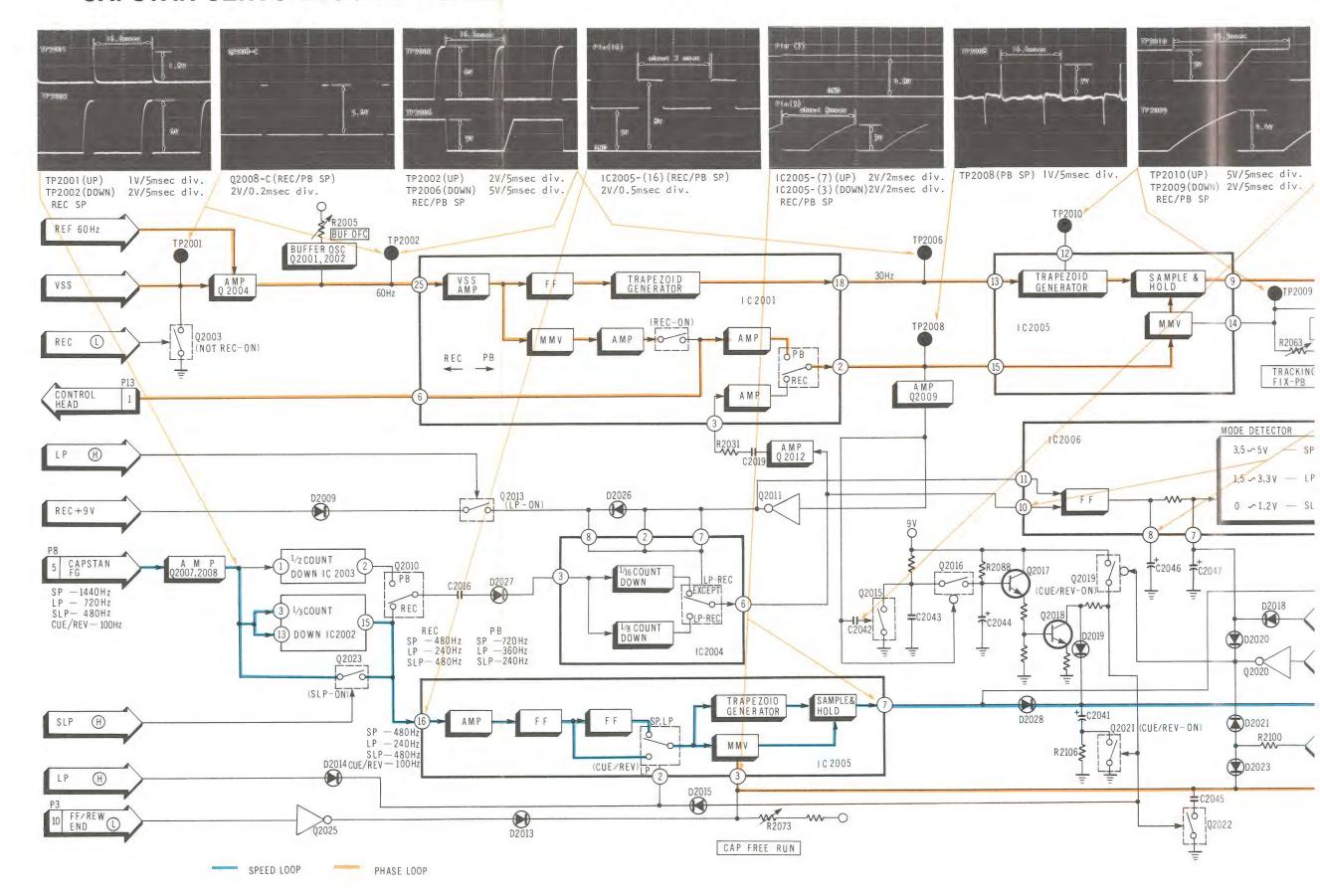


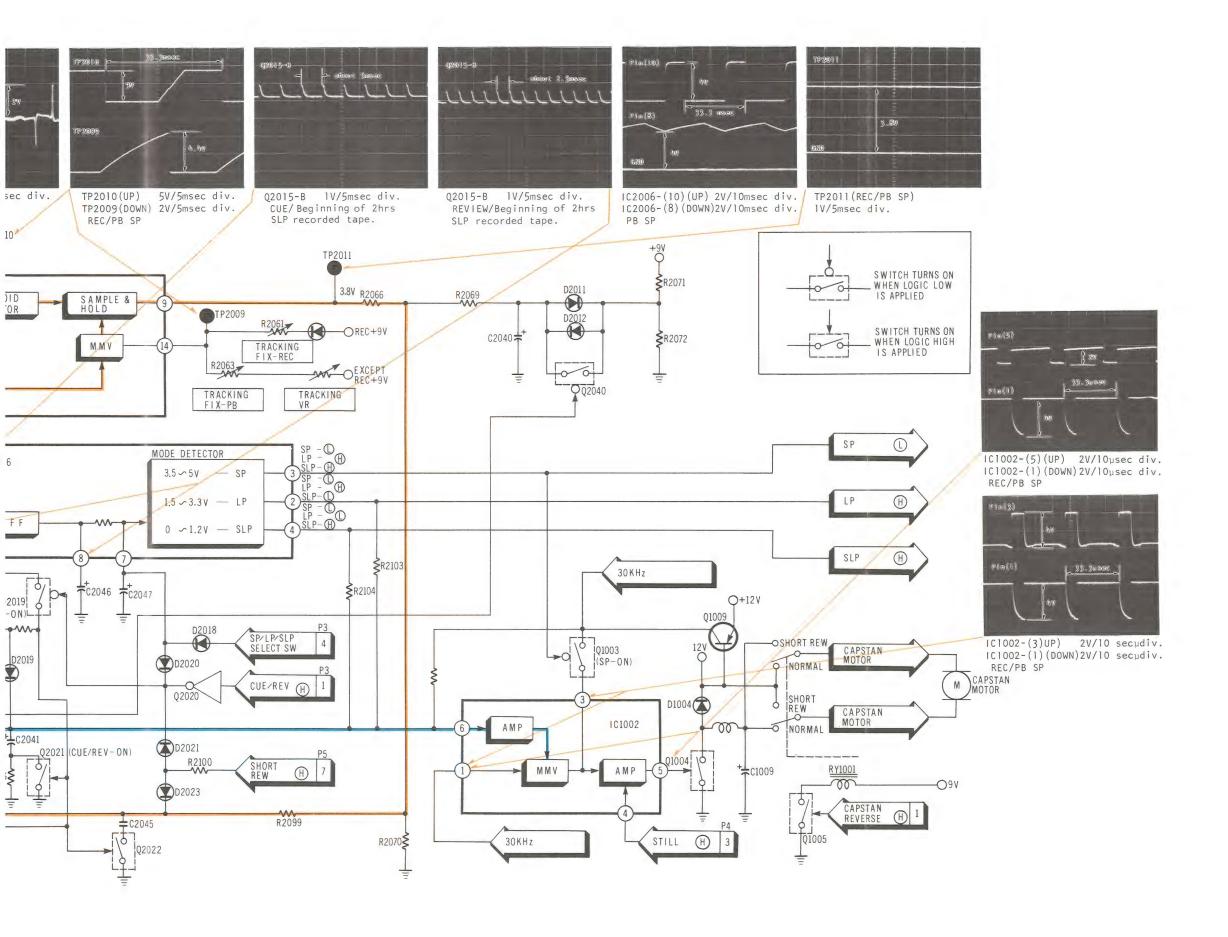
CYLINDER SERVO BLOCK DIAGRAM





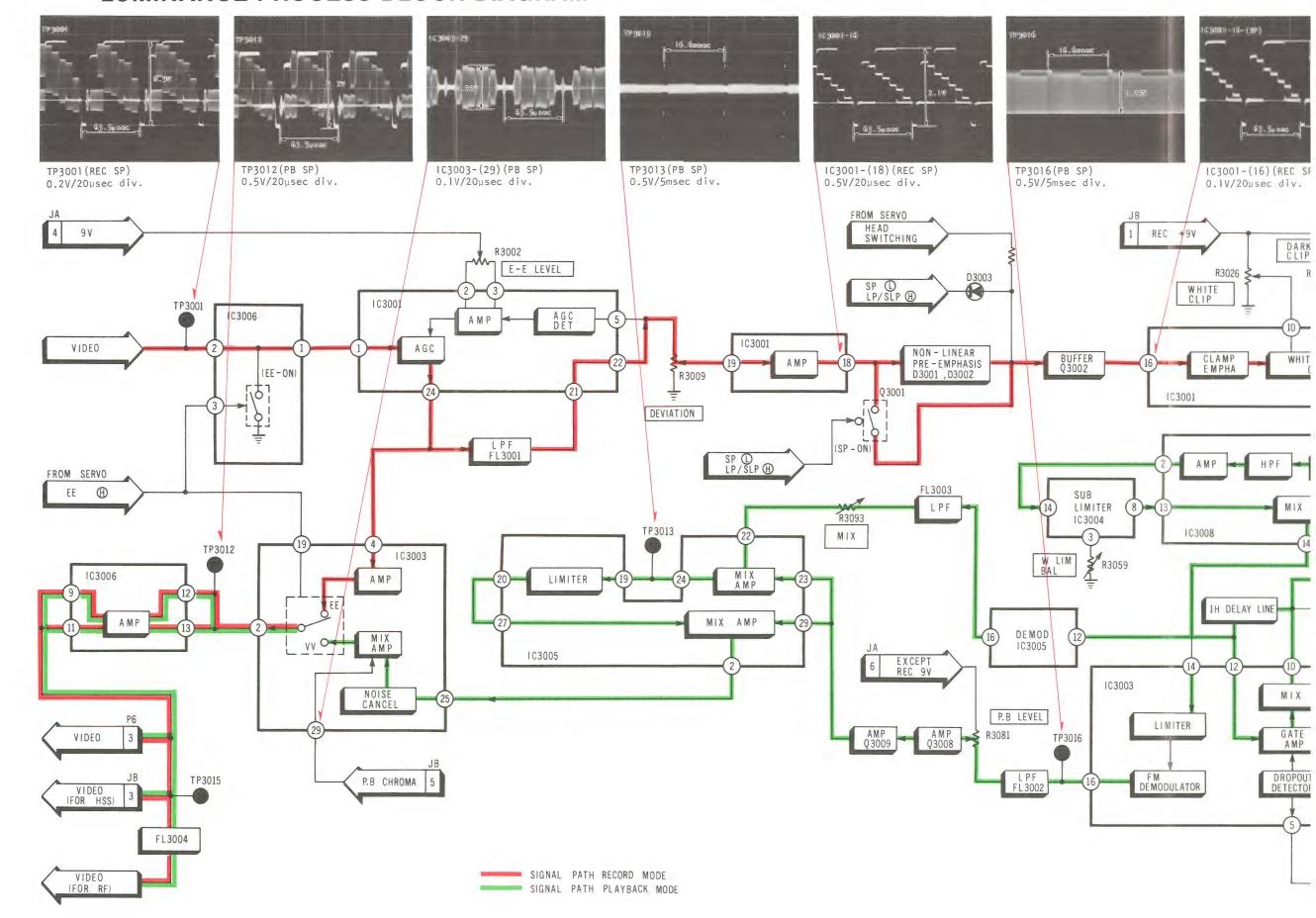
CAPSTAN SERVO BLOCK DIAGRAM

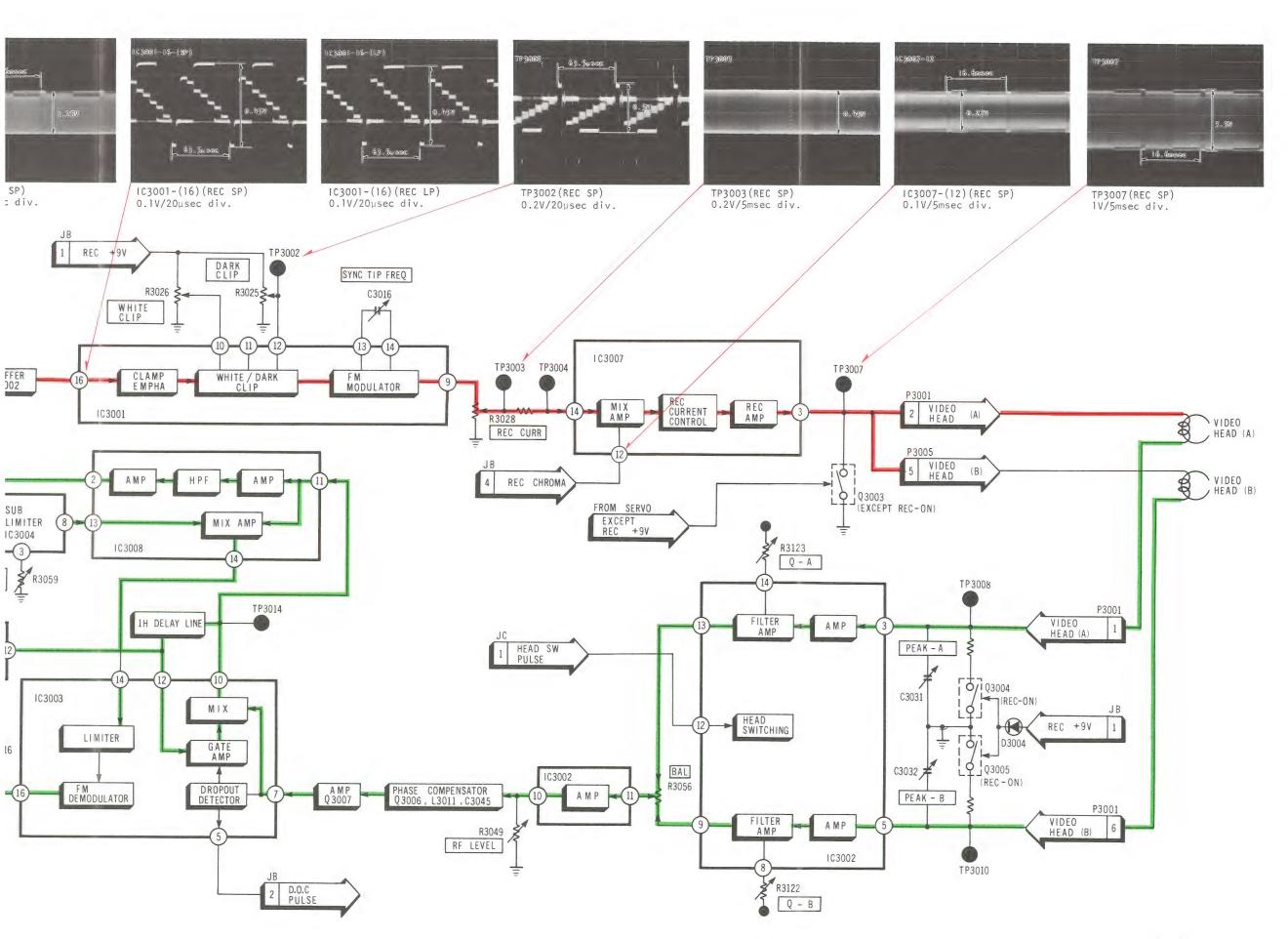




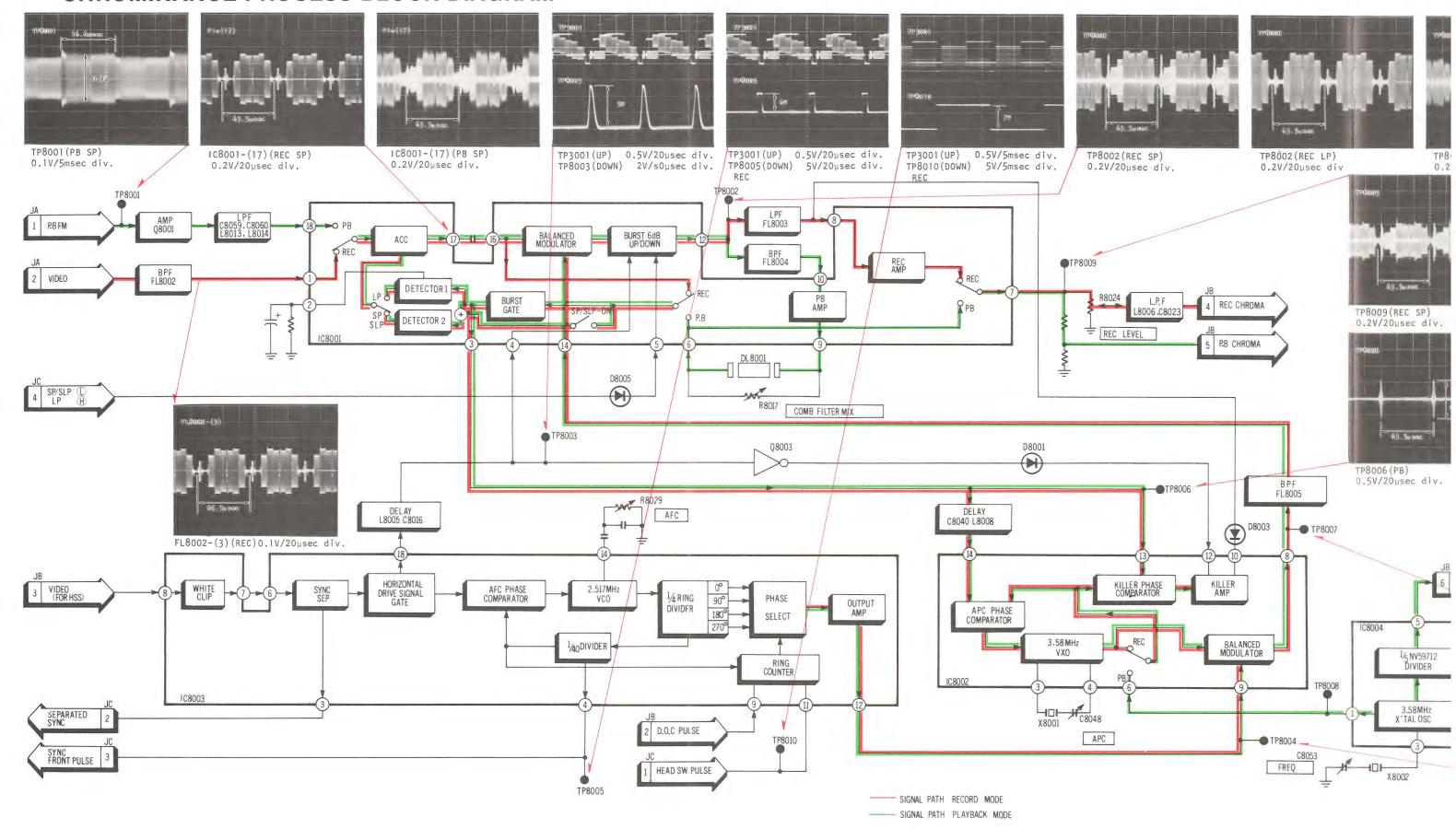


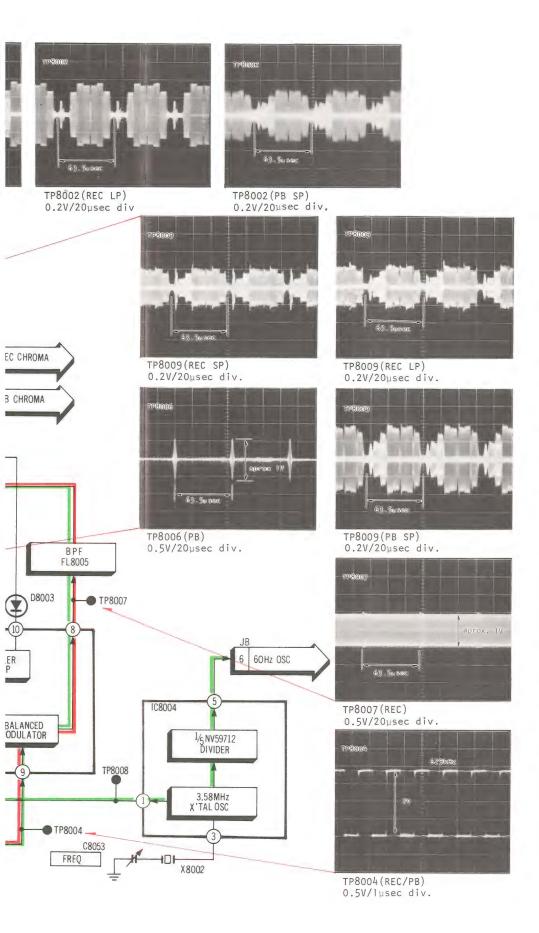
LUMINANCE PROCESS BLOCK DIAGRAM





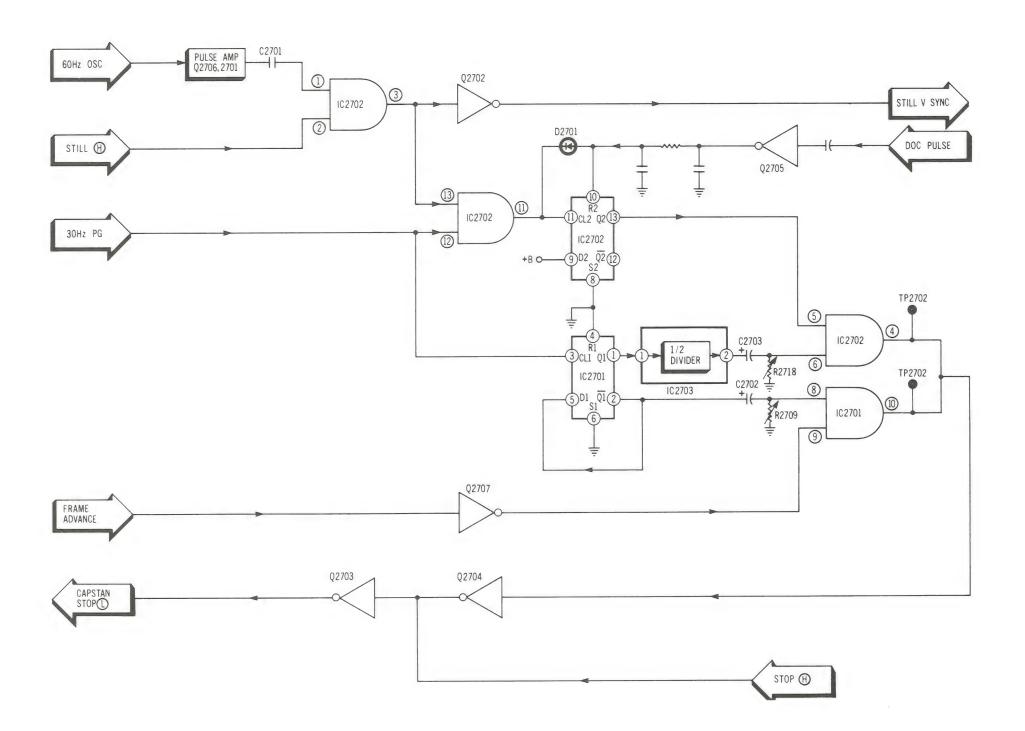
CHROMINANCE PROCESS BLOCK DIAGRAM





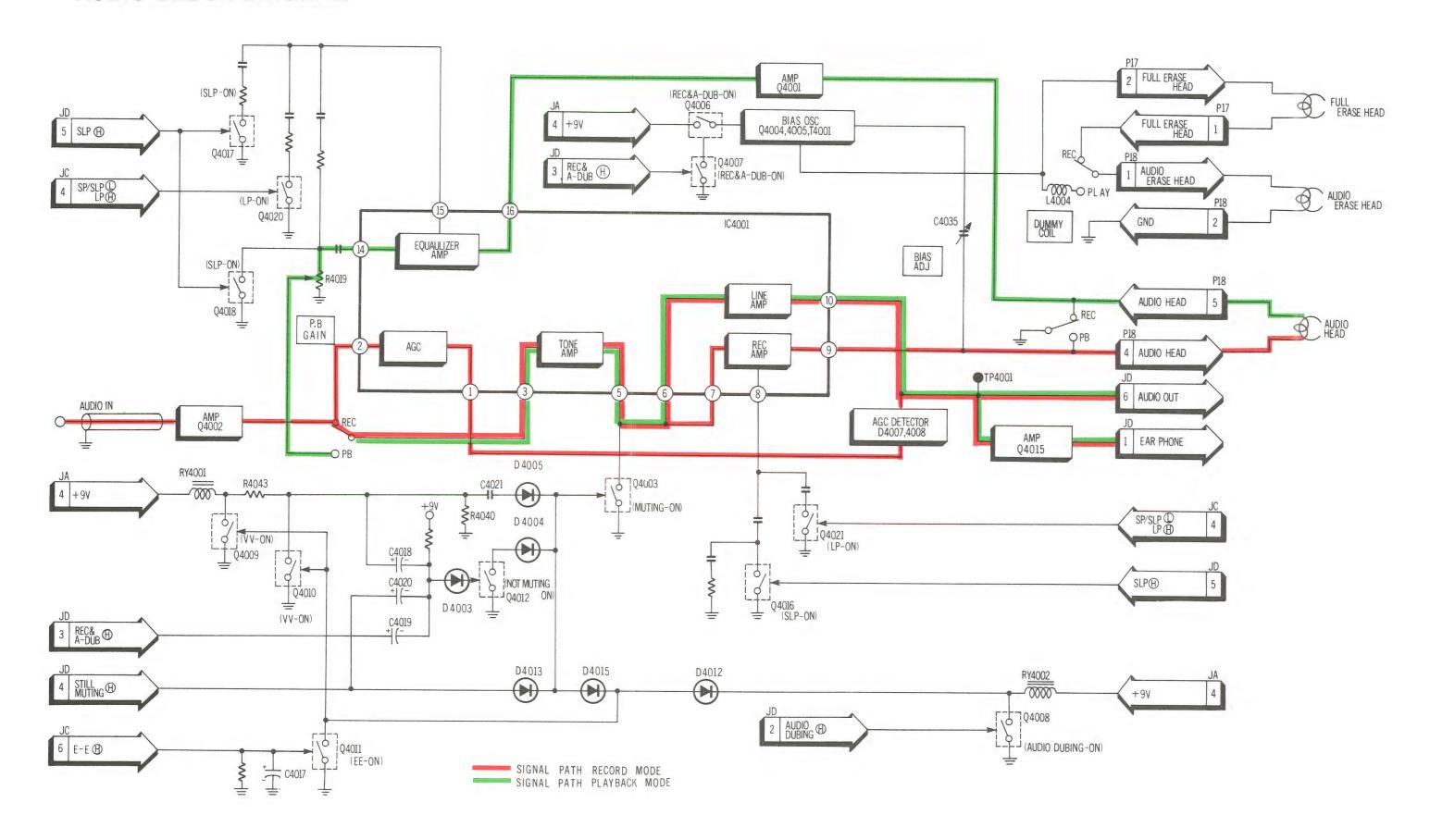
STILL BLOCK DIAGRAM



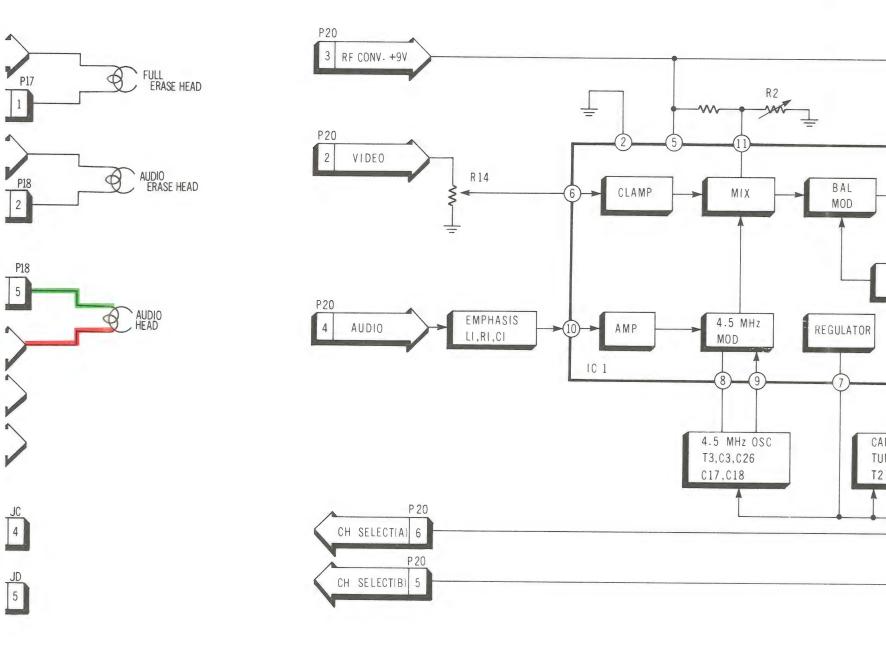




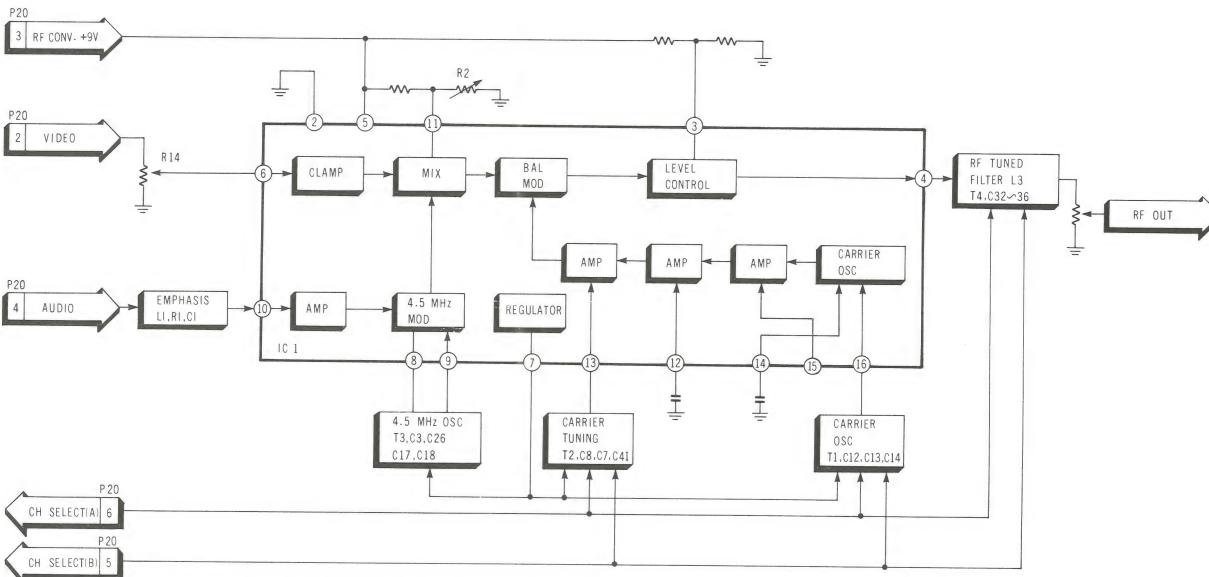
AUDIO BLOCK DIAGRAM



RF CONVERTER BLOCK DIAGRAM



JA 4



ervice Ma Portable Video Cassette Recorder

Vol. 4

Schematic Diagrams **Printed Circuit Board Diagrams**

Panasonic



SPECIFICATIONS

Power Source:

Battery LCR-1812P

Elec. Tuner Unit PV-A32E Prog. Tuner Unit PV-A35P (Not available independently) Multiple AC Adaptor PV-A40 Approx. 9.4W at Play mode

Power Consumption: Television System:

EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

1 track

Tape width 1/2" (12.7 mm), high density Tape Format:

tape

SP mode: 1-5/16 i.p.s (33.35 mm/s) Tape Speed:

LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 1 (SP), 2 (LP) or 3 (SLP) hours

with NV-T60

2 (SP), 4 (LP) or 6 (SLP) hours

with NV-T120

Less than 6 min. with NV-T120 FF/REW Time:

Video: 2 Rotary heads Heads:

Audio/Control: 1 stationary head

Erase: 1 full track erase 1 audio track erase for audio

dubbing

Input Level:

Video: VIDEO IN Jack (RCA type) $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,

 75Ω unbalanced PV-A32E

UHF Input: UHF Ch14-Ch83, or

 300Ω balanced PV-A35P

Video: VIDEO OUT Jack (RCA type) Output Level:

 $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}$, $600 \, \Omega$ unbalanced

RF Modulated: Ch3/Ch4 switchable, 72 dB μ (open voltage),

 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz~8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz, SLP: 150 Hz ~ 5 kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB

LP mode: better than 40 dB SLP mode: better than 40 dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB

LP mode: better than 40 dB SLP mode: better than 40 dB

Operating

Temperature: 32°F-104°F (0°C-40°C)

10%-75% Operating Humidity:

13.5 lbs (6.1 kg) (with battery) Weight: 12"(W) × 4-1/2"(H) × 9-11/16"(D) Dimensions:

 $304(W) \times 114(H) \times 245(D) mm$

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic

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Panasonic Hawaii, Inc. 320 Waiakamilo Road, Honolulu, Hawaii 96817

Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

CONTENTS

SENSOR LAMP C.B.A	4- 1
A/C HEAD UNIT	4- 1
TAKEUP DETECTOR C.B.A	4- 1
SAFETY TAB SW C.B	4- 1
REMOTE PAUSE/EARPHONE JACKS C.B.A	4- 1
CASSETTE DOWN SW C.B	4- 1
DEW SENSOR CONNECTION C.B	4- 1
MODE SELECT SW C.B	4- 1
TAKEUP PHOTO TR C.B.A	4- 1
SUPPLY PHOTO TR C.B.A	4- 1
REMOTE CONTROL BOX C.B	4- 1
SYSTEM CONTROL I CIRCUIT	4- 2
SYSTEM CONTROL II CIRCUIT	4- 4
SERVO & A.V.R. CIRCUIT	4- 6
STILL CIRCUIT	4- 9
MAIN C.B.A. CONNECTION	4-10
LUMINANCE PROCESS CIRCUIT	4-11
CHROMINANCE PROCESS & AUDIO CIRCUIT	4-12
LOADING MOTOR DRIVE CIRCUIT	4-14
D.D. CYLINDER DRIVE CIRCUIT	4-15
JACK PANEL CIRCUIT	4-15
RF CONVERTER CIRCUIT	4-16
CIRCUIT BOARD LAYOUT	4-16
INTERCONNECTION SCHEMATIC DIAGRAM	4-17

SENSOR LAMP C.B.A (VEKS0579)

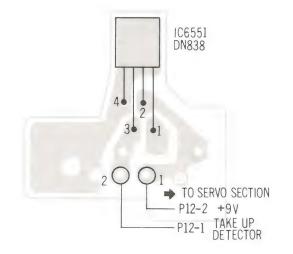
TAKEUP DETECTOR C.B.A (VEKS0250)

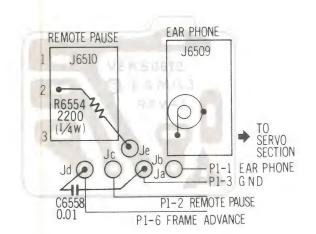
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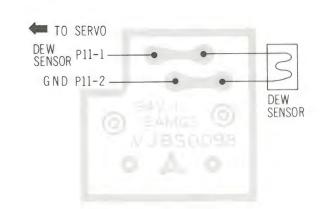
DEW SENSOR CONNECTION C.B.

TAKEUP PHOT



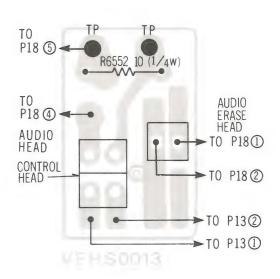




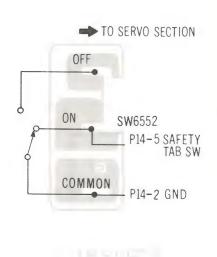


→ TO SERVO TAKE UP PHOTO TR PI

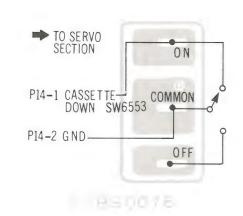
A/C HEAD C.B.A (VEHS0013)



SAFETY TAB SW C.B.



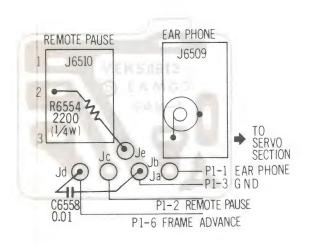
CASSETTE DOWN SW C.B.

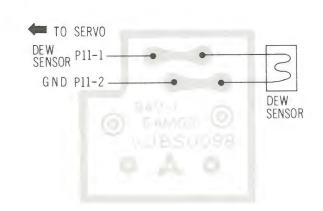


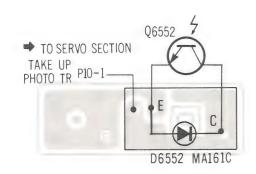
MODE SELECT SW C.B.

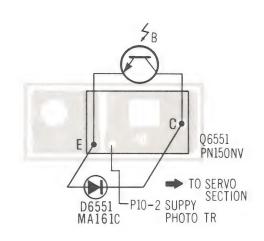


1	FF / REW
2	UNLOADING COMP
3	CUE/REVEW
4	PUASE
5	LOADING COMP





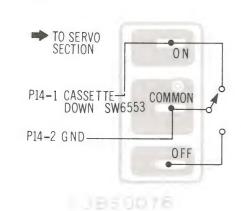




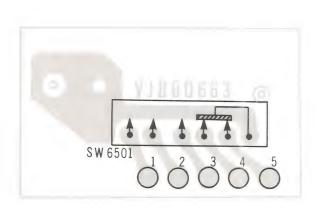
TAB SW C.B.



CASSETTE DOWN SW C.B.

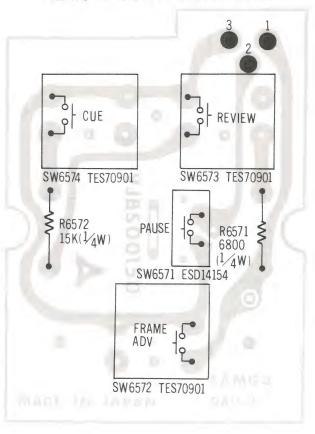


MODE SELECT SW C.B.



1	FF/REW
2	UNLOADING COMP
3	CUE/REVEW
4	PUASE
5	LOADING COMP

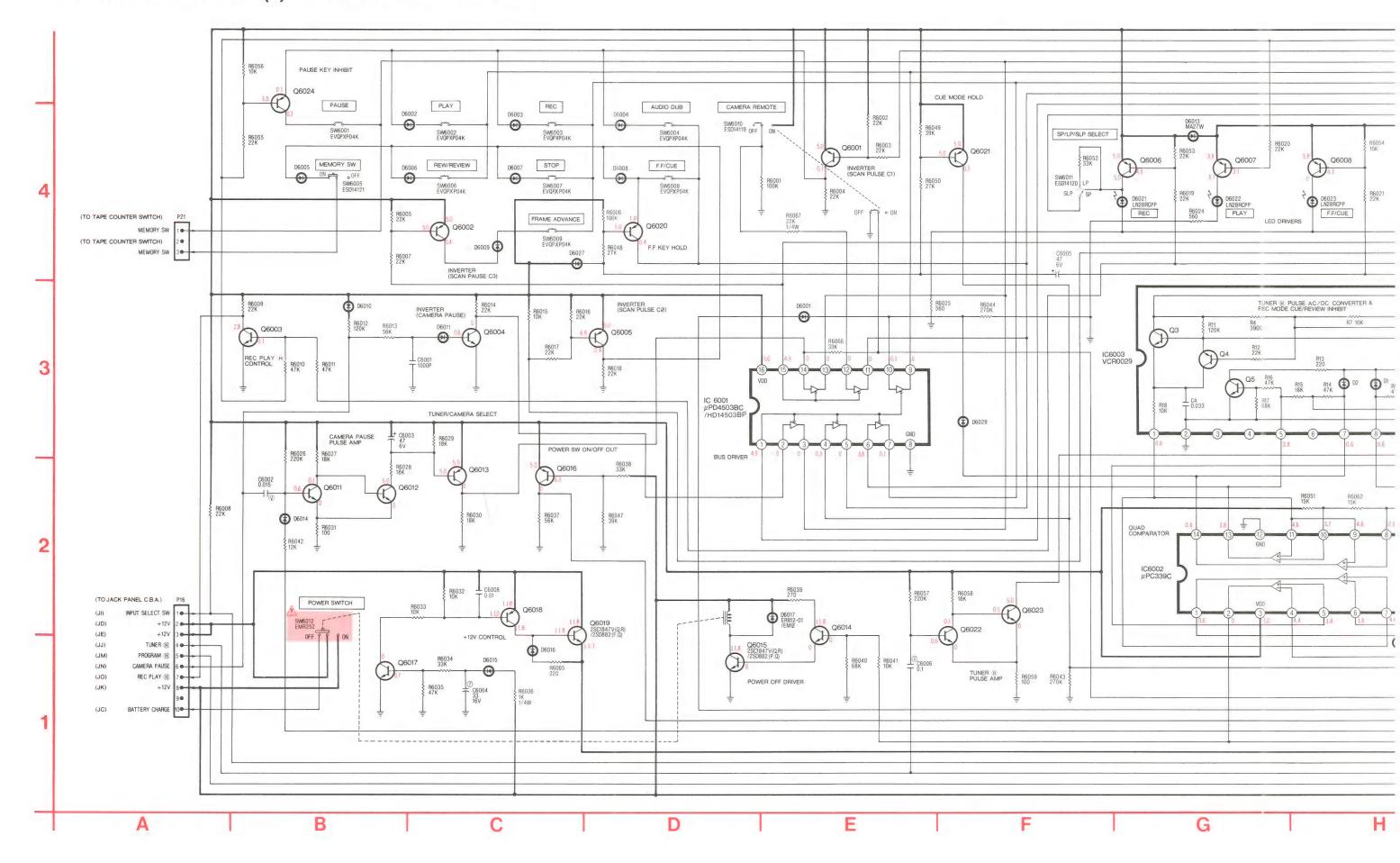
REMOTE CONTROL BOX C.B.



2 - TO REMOTE CONTROL JACK

4-2 SYSTEM CONTROL (I) SCHEMATIC DIAGRAM

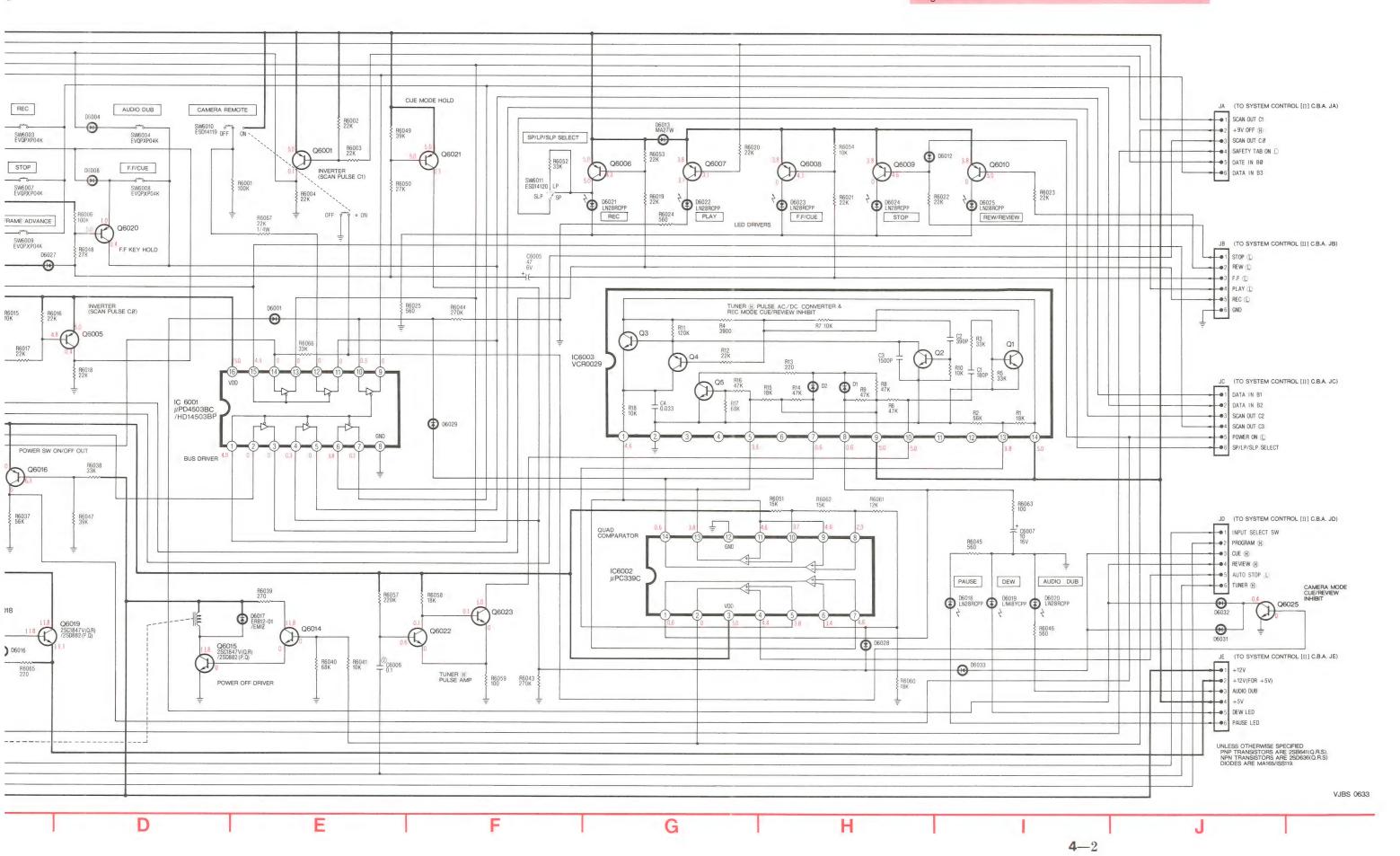
SYSTEM CONTROL (I) SCHEMATIC DIAGRAM



IMPORTANT SAFETY NOTICE

Components identified by shade have special characteristics important for safety.

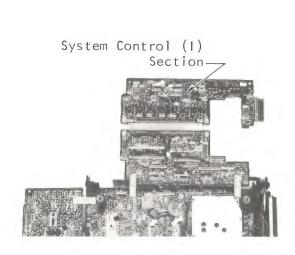
When replacing any of these components, use only the original ones.



																			1								
1		STOP		-	F.F	/		REW			REC	-		P.B			CUE			REV	1		F.A	1	PIN		_
	E	В	С	E	В	С	E	В	С	E	В	С	E	В	С	E	В	С	E	В	С	Е	В	С	NO.	STOP	F
Q6001	5.0	5.0	0.1	5.0	540	0.1	5.0	5.0	0.1	5.0	5.0	0.1	5.0	5.0	0.1	5.0	5.0	0.1	5.0	5.0	0.1	5.0	5.0	0.1	PIN 1	4.9	4
Q6002	5.0	5.0	0.4	5.1	0	0.5	5.0	5.0	0.5	5.0	5.0	0.4	5.0	5.0	0.4	5.0	5.0	0.5	5.0	5.0	0.5	5.0	5.0	0.4	PIN 2	0	0
Q6003	0	0.7	0	0	0.7	0	0	0.7	0	0	0.1	2.8	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	PIN 3	0	0
Q6004	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0.6	0	PIN 4	0.3	0
Q6005	5.0	0	0.4	5.0	4.8	0	5.0	4.8	0.9	5.0	4.8	0.4	5.0	4.8	0.4	5.0	4.8	0.9	5.0	4.8	0	5.0	4.8	0.4	PIN 5	Q	0
Q6006	5.0	4.8	-0.3	5.0	4.8	0	5.0	4.8	0	5.0	4.3	5.0	5.0	4.8	0	5.0	4.8	-0.4	5.0	4.8	-0.3	5.0	4.8	-0.4	PIN 6	3.8	3
Q6007	3.8	4.4	0	3.8	4.4	0	3.8	4.4	0	3.8	3.1	3.7	3.8	3.1	3.8	3.8	3.1	3.7	3.7	3.1	3.7	3.8	3.1	3.7	PIN 7	0.1	0
Q6008	3.8	4.1	0	3.8	3.1	3.7	3.8	4.1	0	3.8	4.1	0	3.8	4.1	0	3.8	3.1	3.7	3.7	4.1	0	3.8	4.1	0	PIN 8	0	0
Q6009	3.8	3.1	3.7	3.8	4.7	0	3.8	4.7	0	3.8	4.6	0	3.8	4.6	0	3.8	4.6	0	3.7	4.6	0	3.8	4.6	0	PIN 9	0	0
Q6010	3.8	5.0	0	3.8	5.0	0	3.8	3.1	3.7	3.8	5.0	0	3.8	5.0	0	3.8	5.0	0	3.8	3.0	3.7	3.8	5.0	0	PIN 10	0.3	0
Q6011	0	0.6	0.1	0	0.7	0.1	0	0.7	0.1	0	0.6	0.1	0	0.6	0.1	0	0.6	0.1	0	0.6	0.1	0	0.6	0.1	PIN 11	0	0
Q6012	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	PIN 12	0	0
Q6013	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	5.0	0	PIN 13	0	0
Q6014	0	0	11.8	0	0	11.7	0	0	11.7	0	0	11.8	0	0	11.7	0	0	11.7	0	0	11.7	0	0	11.7	PIN 14	0	0
Q6015	0	0	11.8	0	0	11.7	0	0	11.7	0	0	11.8	0	0	11.7	0	0	11.7	0	0	11.7	0	0	11.7	PIN 15	4.9	4
Q6016	5.0	6.4	0	5.0	6.3	0	5.0	6.3	0	5.0	6.3	0	5.0	6.3	0	5.0	6.3	0	5.0	6.3	0	5.0	6.3	0	PIN 16	5.1	5
Q6017	0	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0	1	0.7	0	0	0.7	0	0	0.7	0	0	0.7	0			
Q6018	11.8	11.1	11.8	11.7	11.0	11.7	11.7	11.0	11.7	11.8	11.0	11.8	11.7	11.0	11.7	11.7	11.1	11.7	11.7	11.0	11.7	11.7	11.0	11.7			
Q6019	11.2	11.8	11.8	11.0	11.7	11.7	11.0	11.7	11.7	11.1	11.8	11.8	11.0	11.7	11.7	11.0	11.7	11.7	11.0	11.7	11.7	11.0	11.7	11.7			
Q6020	1.0	5.0	0	1.5	5.0	0	1.5	5.0	0	1.0	5.0	0.4		5.0	0	1.5	5.0	0.1	1.6	5.0	0.1	1.0	5.0	0			
Q6021	5.0	5.0	0.2	5.0	5.0	0.3	5.0	5.0	0.3	5.0	5.0	0.3	5.0	5.0	0.3	5.0	5.0	3.7	5.0	5.0	4.0	5.0	5.0	0.4			
Q6022	0	0.6	0.1	0	0.7	0.1			0.1	0	0.6	0.1		0.7	0.1	0	0.6	0.1	0	0.6	0.1	0	0.6	0.1			
Q6023	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.1	5.0	0	0.6	5.0	0	0	5.0	0	0.1	5.0			
Q6024	0.1	4.8	0	0.1	4.8	0	0.1	4.8	0	0.1	3.5	0.3	0.1	3.5	0.3	0.1	3.5	0.4	0.1	3.5	0.4	0.1	3.5	0.3			
Q6025	0	0	0.4	0	0	0.4	0	0	0.4	0	0	0.4	0	0	0.4	0	0	3.9	0	0	4.2	0	0	0.8			

SYSTEM CONTROL (I) SECTION [SYSTEM CONTROL C.B.A (VEPS1026A1)]

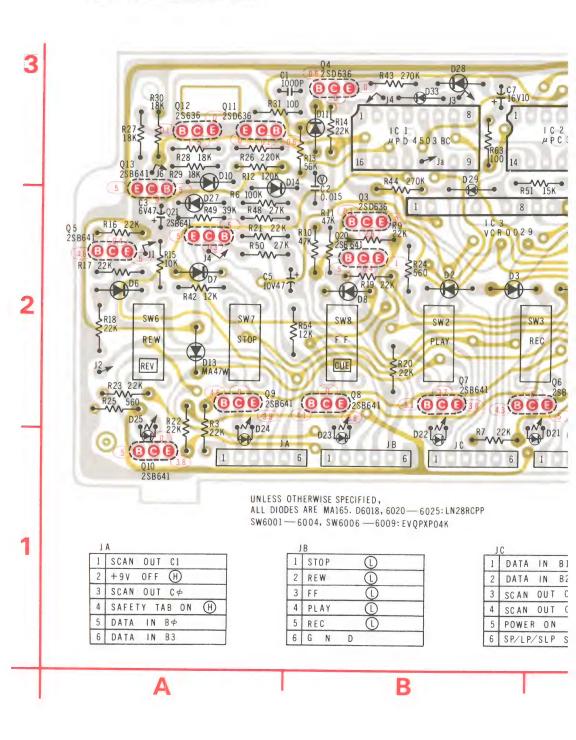
REF. NO.: 6000 SERIES



P21 (System Control I C.B.A)										
PIN NO.	SIGNAL NAME	DESTINATION								
1	Memory Switch ⊕	Tape Counter Switch C.B.A								
2	_	_								
3	Memory Switch ⊖	Tape Counter Switch C.B.A								

P16 (System Control I C.B.A)									
PIN NO.	O. SIGNAL NAME DESTINA								
1	Input Select SW	JT	Jack Panel C.B.A						
2	+ 12 V	JD	Jack Panel C.B.A						
3	+ 12 V	JE	Jack Panel C.B.A						
4	Tuner (H)	JJ	Jack Panel C.B.A						
5	Program (H)	JM	Jack Panel C.B.A						
6	Camera Pause	JN	Jack Panel C.B.A						
7	REC Play (H)	JO	Jack Panel C.B.A						
8	+ 12 V	JK	Jack Panel C.B.A						
9	_	_							
10	Battery Charge	JC	Jack Panel C.B.A						

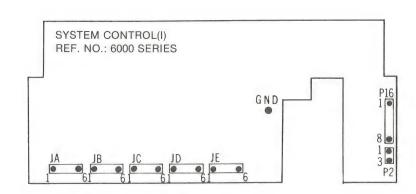
System Control I C.B.A.								
Q6001	C-2							
Q6002	C-2							
Q6003	B-2							
Q6004	B-3							
Q6005	A-2							
Q6006	C-2							
Q6007	B-2							
Q6008	B-2							
Q6009	A-2							
Q6010	A-1							
Q6011	A-3							
Q6012	A-3							
Q6013	A-3							
Q6014	E-2							
Q6015	E-3							
Q6016	D-2							
Q6017	E-2							
Q6018	E-2							
Q6019	D-3							
Q6020	B-2							
Q6021	A-2							
Q6022	D-2							
Q6023	D-3							
Q6024	C-2							
Q6025	D-2							



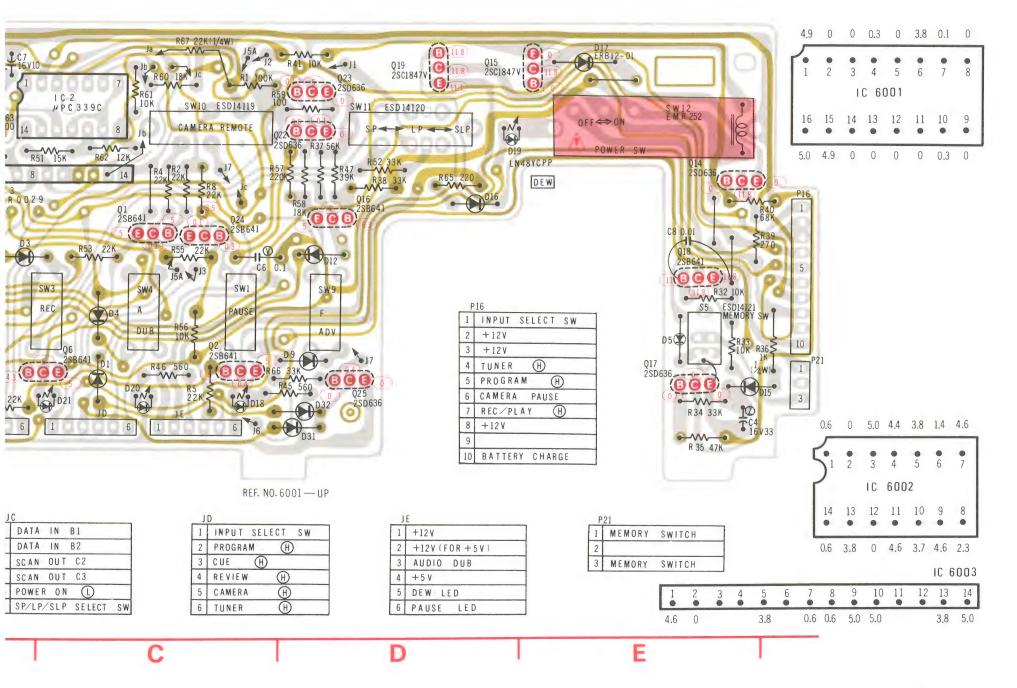
l N				1060	001				PIN				1060	02				PIN				1060	003			
).	STOP	F,F	REW	REC	P.B	CUE	REV	F.A	NO.	STOP	F.F	REW	REC	P.B	CUE	REV	F.A	NO.	STOP	F.F	REW	REC	P.B	CUE	REV	F.A
1	4.9	4.9	4.9	4.9	4.9	4.9	4.1	4.9	PIN 1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	PIN 1	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
2	0	0	0	0	0	0	0	0	PIN 2	0	0	0	0	0	0	0	0	PIN 2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	PIN 3	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	PIN 3								
4	0.3	0.2	0.3	0.3	0.3	3.7	4.0	0.4	PIN 4	5.0	4.4	4.4	4.4	4.4	4.4	4.4	4.4	PIN 4								
5	0	0	0	0	0	0.1	0.1	0	PIN 5	3.8	3.8	3.8	3.8	3.8	0	3.8	3.8	PIN 5	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
6	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	PIN 6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	PIN 6								
7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	PIN 7	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	PIN 7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
8	0	0	0	0	0	0	0	0	PIN 8	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	PIN 8	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
9	0	0	0	0	0	0	0.1	0	PIN 9	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	PIN 9	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0
10	0.3	0.3	0.3	0.3	0.3	0.3	4.0	0.4	PIN 10	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	PIN 10	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
11	0	0	0	0	0	0.1	0.1	0	PIN 11	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	PIN 11								
12	0	0	0	0	0	0	0	0	PIN 12	0	0 ′	0	0	0	0	0	0	PIN 12								
1 13	0	0	0	0	0	0	0	0	PIN 13	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	PIN 13	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
1 14	0	0	0	0	0	0	0	0	PIN 14	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0,6	PIN 14	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
1 15	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9										-				-				
1 16	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0																		



Components identified by shade have special characteristics important for safety. When replacing any of these components, use only the original ones.

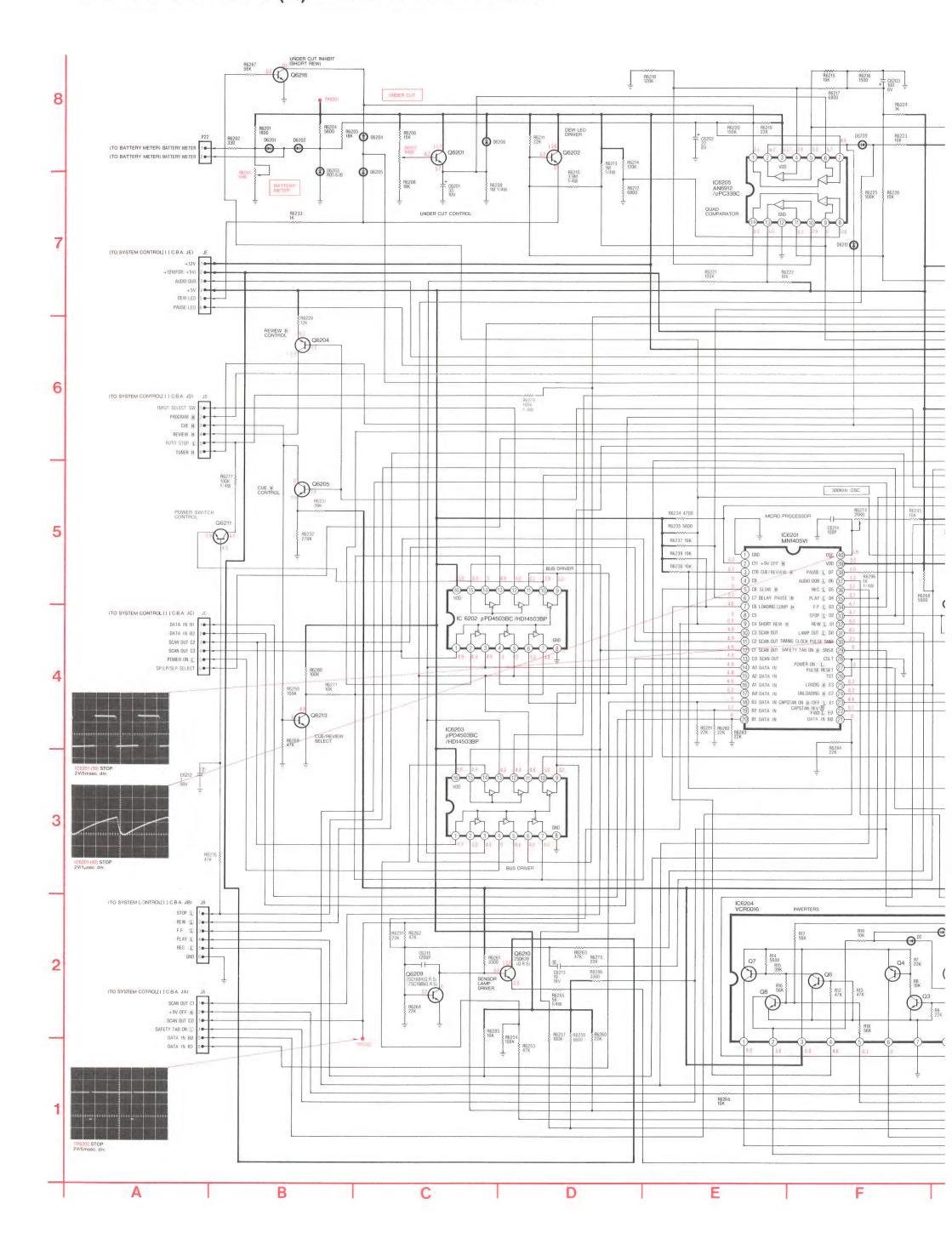


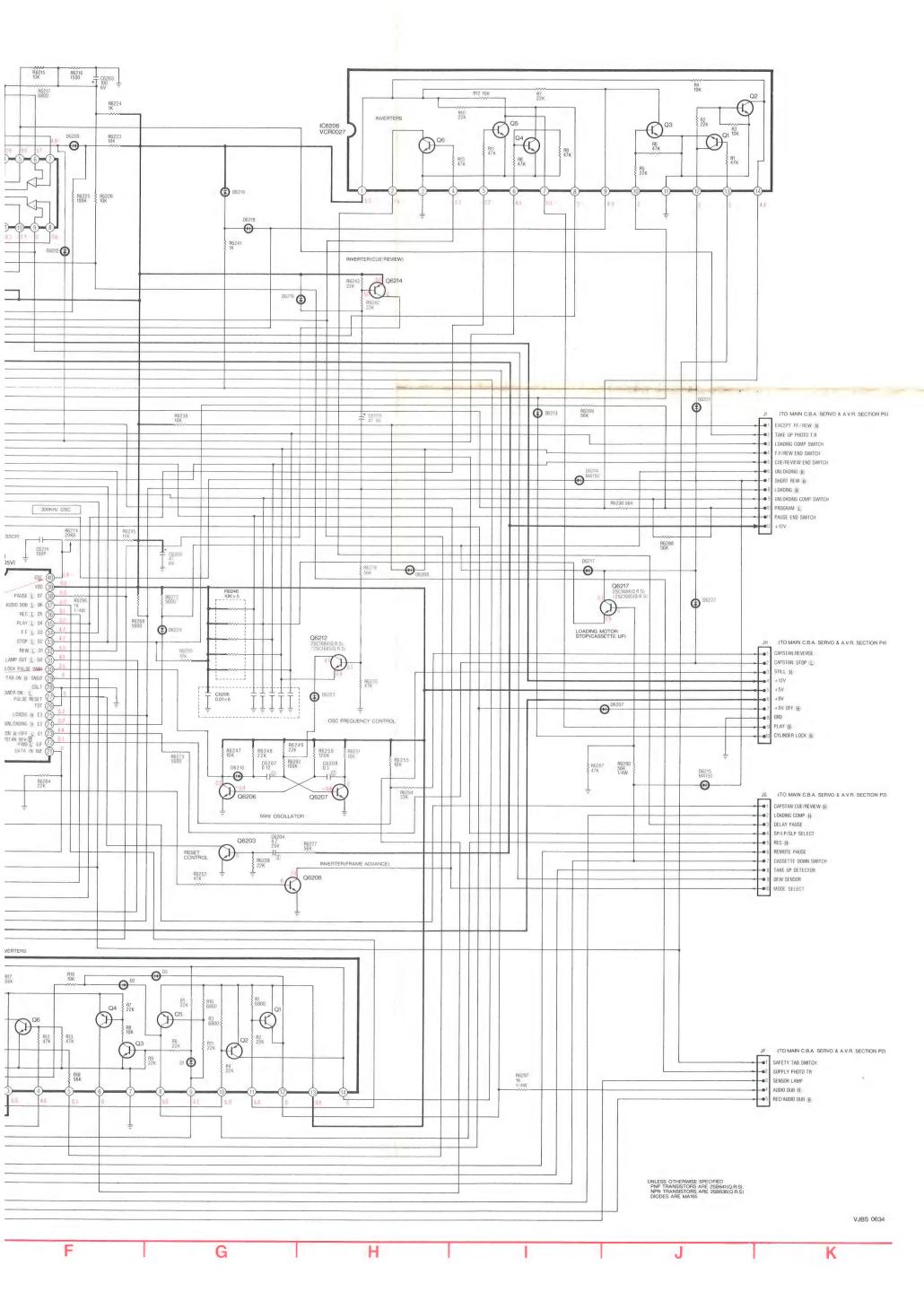
26A1)]



4-4 SYSTEM CONTROL (II) SCHEMATIC DIAGRAM

SYSTEM CONTROL (II) SCHEMATIC DIAGRAM





JA (System Control II C.B.A)										
PIN NO.	SIGNAL NAME	DESTINATION								
1	Scan Out C1	JA-1	System Control I C.B.A							
2	+9V Off	JA-2	System Control I C.B.A							
3	Scan Out Co	JA-3	System Control I C.B.A							
4	Safety TAB On (L)	JA-4	System Control I C.B.A							
5	Data In Bø	JA-5	System Control I C.B.A							
6	Data In B3	JA-6	System Control I C.B.A							

	JB (System	Control II	C.B.A)
PIN NO.	SIGNAL NAME		DESTINATION
1	Stop (L)	JB-1	System Control I C.B.A
2	REW (L)	JB-2	System Control I C.B.A
3	FF (L)	JB-3	System Control I C.B.A
4	Play (L)	JB-4	System Control I C.B.A
5	REC (L)	JB-5	System Control I C.B.A
6	GND	JB-6	System Control I C.B.A

	JC (System	Control II	C.B.A)
PIN NO.	SIGNAL NAME		DESTINATION
1	Data In B1	JC-1	System Control I C.B.A
2	Data In B2	JC-2	System Control I C.B.A
3	Scan Out C2	JC-3	System Control I C.B.A
4	Scan Out C3	JC-4	System Control I C.B.A
5	Power On (L)	JC-5	System Control I C.B.A
6	SP/LP/SLP Select	JC-6	System Control I C.B.A

	JD (System	Control II	C.B.A)
PIN NO.	SIGNAL NAME		DESTINATION
1	Input Select SW	JD-1	System Control I C.B.A
2	Program (H)	JD-2	System Control I C.B.A
3	CUE (H)	JD-3	System Control I C.B.A
4	Review (H)	JD-4	System Control I C.B.A
5	Auto Stop (L)	JD-5	System Control I C.B.A
6	Tuner (H)	JD-6	System Control I C.B.A

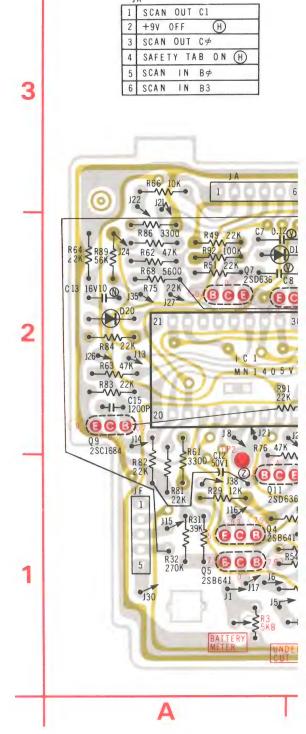
	JE (System	Control II	C.B.A)
PIN NO.	SIGNAL NAME		DESTINATION
1	+ 12 V	JE-1	System Control I C.B.A
2	+ 12V (For +5V)	JE-2	System Control I C.B.A
3	Audio DUB	JE-3	System Control I C.B.A
4	+ 5 V	JE-4	System Control I C.B.A
5	DEW LED	JE-5	System Control I C.B.A
6	Pause LED	JE-6	System Control I C.B.A

	P22 (System	Control II C.B.A)
PIN NO.	SIGNAL NAME	DESTINATION
1	Battery Meter	Battery Meter C.B.A
2	Battery Meter	Battery Meter C.B.A

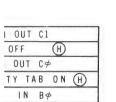
PIN			-	106	201		,	
NO.	STOP	F.F	REW	REC	P.B	CUE	REV	F.A
PIN 1	0	0			0			0
	-	0	0	0	1	0	0	
PIN 2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 3	0.1	0.1	0.1	0.1	0.1	4.2	4.2	0.1
PIN 4	0		1			0		0
	1	5.0	5.0	0	0	1	0	-
PIN 5	0	0	0	0	0	0	0	0
PIN 6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PIN 7	0.1					4.6		4.6
		0.1	0.1	4.6	4.6		4.6	
PIN 8	0	0	0	0	0	0	0	0
PIN 9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 10	4.9				1	4.9	4.9	4.9
		4.9	4.9	4.9	4.9			
PIN 11	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 12	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
PIN 13	4.3	3.9	3.9	4.3	4.3	3.9	3.9	4.3
-	1		1	4.9				
PIN 14	5.0	4.9	4.8	-	4.9	4.9	0	4.9
PIN 15	4.9	4.9	4.9	4.8	4.8	4.9	4.9	4.8
PIN 16	4.9	4.9	4.9	4.9	4.9	0.2	0.2	4.9
					0.2			
	0.1	0.3	0.3	0.2	-	0.2	0.2	0.2
PIN 18	0	0	0	0	0	0	0.1	0
PIN 19	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0
PIN 20		0	0	0	0	0.1		
	0	1	-		-	-	0.1	Q
PIN 21	0	0	0	0	0	0	0	0
PIN 22	0.1	0.1	4.6	0.1	0.1	0.1	4.5	0.1
PIN 23	0.1	4.4	4.4	4.4	4.4	4.4	4.4	
					-	-		4.4
PIN 24	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 25	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PIN 26	0	0	0	0	0	0	0	0
		*	*		*	5.0		*
PIN 27	5.0			0			5.0	
PIN 28	0	0	0	0	0	0	0	0
PIN 29	0	3.8	3.8	0	0	0	0	0
PIN 30	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIN 31	4.4	0.1	0.1	4.3	4.3	0.1	0.1	*
PIN 32	5.0						0.1	
	+	5.0	0.1	5.0	5.0	5.0	+	5.0
PIN 33	0.2	4.7	4.7	4.7	4.7	4.7	4.7	0
PIN 34	4.8	0.1	4.7	4.7	4.7	0.1	4.7	4.7
PIN 35	4.4		4.4		0.2	0.2	0.2	0.2
	1	4.4		0.2				
PIN 36	4.5	4.5	4.5	0.1	4.5	4.5	4.5	4.5
PIN 37	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PIN 38	5.1	5.1	5.0	5.0		- 0	E O	0.1
	+				5 ()	5.0	1 5.0	
PIN 39	5 1				5.0	5.0	5.0	
PIN 39	5.1	5.1	5.1	5.0	5.0	5.0	5.0	5.0
PIN 39 PIN 40	5.1 1.8							
PIN 40		5.1	5.1	5.0	5.0	5.0	5.0	5.0
PIN 40	1.8	5.1	5.1	5.0 1.8	5.0	5.0	5.0	5.0
PIN 40 PIN NO.		5.1 1.8 F.F	5.1 1.8	5.0	5.0	5.0	5.0	5.0
PIN 40	1.8	5.1	5.1	5.0 1.8	5.0	5.0	5.0	5.0
PIN 40 PIN NO.	1.8 STOP	5.1 1.8 F.F	5.1 1.8 REW 4.9	5.0 1.8 1C6 REC 4.9	5.0 1.8 202 P.B 4.9	5.0 1.8 CUE 4.9	5.0 1.8 REV 4.9	5.0 1.8
PIN 40 PIN NO. PIN 1 PIN 2	STOP 4.9 4.3	5.1 1.8 F.F 4.9	5.1 1.8 REW 4.9	5.0 1.8 1C6 REC 4.9 4.3	5.0 1.8 202 P.B 4.9 4.3	5.0 1.8 CUE 4.9 4.3	5.0 1.8 REV 4.9	5.0 1.8 F.A 4.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3	STOP 4.9 4.3	5.1 1.8 F.F 4.9 0 4.9	5.1 1.8 REW 4.9 0	5.0 1.8 1C6 REC 4.9	5.0 1.8 202 P.B 4.9	5.0 1.8 CUE 4.9	5.0 1.8 REV 4.9	F.A 4.9 0 4.8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4	STOP 4.9 4.3 0	5.1 1.8 F.F 4.9	5.1 1.8 REW 4.9	5.0 1.8 1C6 REC 4.9 4.3	5.0 1.8 202 P.B 4.9 4.3	5.0 1.8 CUE 4.9 4.3	5.0 1.8 REV 4.9	5.0 1.8 F.A 4.9 0 4.8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3	STOP 4.9 4.3	5.1 1.8 F.F 4.9 0 4.9	5.1 1.8 REW 4.9 0	5.0 1.8 1C6 REC 4.9 4.3	5.0 1.8 202 P.B 4.9 4.3 5.0	5.0 1.8 CUE 4.9 4.3 4.9	5.0 1.8 REV 4.9 4.3 4.9 5.0	F.A 4.9 0 4.8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4	STOP 4.9 4.3 0 5.1 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9	REW 4.9 0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9	5.0 1.8 REV 4.9 4.3 4.9 5.0 4.9	F.A 4.9 0 4.8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6	STOP 4.9 4.3 0 5.1 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9	REW 4.9 0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9	5.0 1.8 REV 4.9 4.3 4.9 5.0 4.9	F.A 4.9 0 4.8 0 4.8 5.0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7	STOP 4.9 4.3 0 5.1 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 5.1	5.1 1.8 REW 4.9 0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9	5.0 1.8 REV 4.9 4.3 4.9 5.0 4.9	F.A 4.9 0 4.8 0 4.8 5.0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8	STOP 4.9 4.3 0 5.1 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9	REW 4.9 0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9	5.0 1.8 REV 4.9 4.3 4.9 5.0 4.9	F.A 4.9 0 4.8 0 4.8 5.0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7	STOP 4.9 4.3 0 5.1 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 5.1 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9 5.0 0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2	F.A 4.9 0 4.8 0 4.8 5.0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0	F.F 4.9 0 4.9 5.1 4.9 0 0.3	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 5.0 4.9 0	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9 5.0 0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2	F.A 4.9 0 4.8 0 4.8 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0 0.1	F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 5.0 4.9 0 0.3	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0 0.2 3.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9 5.0 0 0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2 0	F.A 4.9 0 4.8 0 4.8 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1	F.F 4.9 0 4.9 5.1 4.9 0 0.3	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 5.0 4.9 0	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9 5.0 0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2	F.A 4.9 0 4.8 0 4.8 5.0 4.9 0 0.2 3.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0 0.1	F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 5.0 4.9 0 0.3	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0 0.2 3.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 4.9 5.0 0 0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2 0	F.A 4.9 0 4.8 0 4.8 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0 0.2 3.9 0.2 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0	REV 4.9 4.3 4.9 5.0 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0	F.A 4.9 0 4.8 0 4.8 5.0 4.9 0 0.2 3.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0 0.1 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0	FEV 4.9 4.3 4.9 5.0 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0 0.1 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0.2	FEV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0 0.1 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0	FEV 4.9 4.3 4.9 5.0 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0 0.1 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0.2	FEV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 13 PIN 14 PIN 15 PIN 15	STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 0 0.1 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 0.2 5.0 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0.2	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 16 PIN 15	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 0	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 0.2	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 5.0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 15 PIN 16 PIN 16	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 0 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1	FEW 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 REW 1.8	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 0.2 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 0.2 0.2	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 0.2 8.0 0.2	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 16 PIN 15	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 0	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 0.2	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 5.0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 15 PIN 16 PIN 16	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 0 4.9 5.1	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1	FEW 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 REW 1.8	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 0.2 5.0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 0.2 0.2	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0.2 8.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 16 PIN 15 PIN 16 PIN 16	1.8 STOP 4.9 4.3 0 5.1 4.9 0 0.1 0 0.1 5.0 4.9 0 4.9 5.1 5.0 4.9 5.1 5.0 4.9 6 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9	FEW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 FEW 4.9 5.1	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1.66 REC 4.9 1.66 REC 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 0.2 5.0 4.9 7.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0 0.2 0.2 0.2 0.2 0.2	F.O 1.8 REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0.2 5.0 0.2 4.9 5.0 0.2 0.2 5.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 15 PIN 16 PIN 15 PIN 16 PIN 17 PIN 18 PIN 16 PIN 17 PIN 18 PIN 18	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 0 4.9 5.1 STOP 4.9 5.0 5.0	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0 4.9 5.1 4.9 5.1 4.9 5.1 4.9 5.1 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9 5.1 REW 4.9 5.0	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 1C6 REC 4.9 0 4.3	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 203 P.B 4.9 5.0 4.9 5.0 4.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F.O 1.8 REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 0.2 3.9 0.2 5.0 4.9 5.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0
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PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 15 PIN 16 PIN 15 PIN 16 PIN 17 PIN 18 PIN 16 PIN 17 PIN 18 PIN 18	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 5.0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0 4.9 5.1 4.9 5.1 4.9 5.1 4.9 5.1 4.9	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9 5.1 REW 4.9 5.0	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.3 4.9 0 0 4.9 0 0 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 203 P.B 4.9 5.0 4.9 5.0 4.8	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F.O 1.8 REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 0.2 3.9 0.2 5.0 4.9 5.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 16 PIN 17 PIN 16 PIN 17 PIN 18 PIN 16 PIN 17 PIN 18	1.8 STOP 4.9 4.3 0 5.1 4.9 5.1 4.9 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 5.0 0	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 6.0 0 0 0	REW 4.9 5.0 4.9 5.1 REW 4.9 5.0 4.9 5.0 4.9 5.1 REW 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.8 0 4.9 5.0 4.9	5.0 1.8 IC6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 0.0 5.0 4.9 0 0.0 6.0 6.0 6.0 6.0 6.0 6.0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 203 P.B 4.9 5.0 0 4.9 5.0 0	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0.2 4.9 5.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0
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PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 15 PIN 16 PIN 17 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 6 PIN 7 PIN 7 PIN 8	STOP 4.9 4.3 0 5.1 4.9 0 0.1 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 5.0 0 4.9 5.0 0 4.9 5.0 0 0 1.9 5.0 0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0 0 1.9 5.0	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 5.0 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9	REW 4.9 0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0 0.2 5.0 4.9 0 0 0 0 0 0 0 0 0 0 0 0 0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 6 6 7 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9	CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0 4.9 5.0 0 4.9 5.0 0 4.9 6.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0 0.2 0 4.9 5.0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 5.0 4.9 0 5.0 4.9 0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6
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PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 10 PIN 17 PIN 17 PIN 18 PIN 19 PIN 10 PIN 17 PIN 18 PIN 19 PIN 10 PIN 10 PIN 10 PIN 11 PIN 12	STOP 4.9 4.3 0 5.1 4.9 0 0.1 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 1 5.0 4.9 0 4.9 5.0 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 6.9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REW 4.9 0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 4.9 0 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.8 5.0 0 0 4.9 4.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 4.9 6.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0 0.2 0 4.9 5.0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 5.0 4.9 0 5.0 4.9 0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 16 PIN 17 PIN 18 PIN 9 PIN 10 PIN 17 PIN 18 PIN 18 PIN 9 PIN 10 PIN 17 PIN 18 PIN 18 PIN 19 PIN 19 PIN 3	1.8 STOP 4.9 4.3 0 5.1 4.9 0 0.1 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9	REW 4.9 0.4.9 5.0 4.9 0.3 4.0 0.3 5.0 4.9 5.1 REW 4.9 5.0 4.9 6.4.9 6.4.9 6.6 6.6 6.7 6.7 6.7 6.7 6.7 6.7 6.7 6.7	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 0 0 0 0 0 0 0 0 0 0 0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 4.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 4.9 6.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 5.4.8 0 4.8 4.9 0.5 4.8 0 4.8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 10 PIN 17 PIN 18 PIN 18 PIN 19 PIN 10 PIN 17 PIN 18 PIN 19 PIN 19 PIN 19 PIN 19 PIN 19 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 9 PIN 9 PIN 10 PIN 11	STOP 4.9 4.3 0 5.1 4.9 0 0.1 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 1 5.0 4.9 0 4.9 5.0 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9	5.1 1.8 F.F 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 6.9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REW 4.9 0.4.9 5.0 4.9 0.3 4.0 0.3 5.0 4.9 5.1 REW 4.9 5.0 4.9 6.0 6.3 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 4.9 0 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.8 5.0 0 0 4.9 4.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 4.9 5.0 0 4.9 6.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0 4.9 5.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 5.0 4.9 0 4.8 4.9 0 5.0 4.9 0 4.8 6 6 6 6 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 10 PIN 11	1.8 STOP 4.9 4.3 0 5.1 4.9 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.1 1.8 F.F. 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 4.9 4.9 4.9 4.9 6 6 6 6 6 6 6 6 6 6 6 6 6	REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9 5.1 REW 4.9 5.0 4.9 4.9 4.9 5.0 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 0 4.9 5.0 4.9 4.9 4.9 4.8 4.8 4.9 4.8 4.8 4.9 4.8 4.9 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.9 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.8 5.0 0 0 4.9 4.9 6 6 6 6 6 6 6 6 6 6 6 6 6	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 3.9 0.2 5.0 0 0.2 0 4.9 5.0 0 0.2 0 0.2 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	FEV 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 0.2 5.0 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 5.0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 0 6.0 0 0 6.0 0 0 0
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 10 PIN 11 PIN 12	1.8 STOP 4.9 4.3 0 5.1 4.9 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.1 1.8 F.F. 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 6 6 6 6 6 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8	5.1 1.8 REW 4.9 0 4.9 5.0 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 REW 4.9 5.0 4.9 4.9 5.0 4.9 4.9 5.0 4.9 4.9 5.0 4.9 4.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0 5.0 4.9 0 0.2 3.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0.2 5.0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 4.9 0 0 0 0 0 0 0 0 0 0 0 0 0	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 4.9 5.0 0 4.9 5.0 0 0.2 3.9 0.2 5.0 0 0.2 0 0.2 0.2 0 0.2 0 0.2 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	REV 4.9 4.3 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 4.9 5.0 6.2 6.2 6.2 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 4.8 4.9 0.5 4.8 4.9 0 4.8 4.8 4.9 0 4.8 4.9 0 4.9 0 4.9 0 6 4.9 0 6 6 6 6 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8
PIN 40 PIN NO. PIN 1 PIN 2 PIN 3 PIN 4 PIN 5 PIN 6 PIN 7 PIN 8 PIN 10 PIN 11 PIN 12 PIN 13 PIN 14 PIN 15 PIN 10 PIN 11	1.8 STOP 4.9 4.3 0 5.1 4.9 0 0.1 5.0 4.9 5.1 STOP 4.9 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	5.1 1.8 F.F. 4.9 0 4.9 5.1 4.9 0 0.3 4.0 0.3 5.0 4.9 5.1 4.9 0 4.9 5.1 4.9 0 4.9 5.1 4.9 4.9 4.9 4.9 4.9 6 6 6 6 6 6 6 6 6 6 6 6 6	FEW 4.9 REW 4.9	5.0 1.8 1C6 REC 4.9 4.3 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 5.1 1C62 REC 4.9 0 4.9 5.0 4.9 0 4.9 5.0 4.9 4.9 4.9 4.8 4.8 4.9 4.8 4.8 4.9 4.8 4.9 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.9 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.8 4.9 4.9 4.8 4.8 4.8 4.8 4.8 4.8 4.8 4.8	5.0 1.8 202 P.B 4.9 4.3 5.0 0 4.8 5.0 0 0.2 3.9 0.2 5.0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.9 5.0 0 4.8 5.0 0 0 4.9 4.9 6 6 6 6 6 6 6 6 6 6 6 6 6	5.0 1.8 CUE 4.9 4.3 4.9 5.0 0 0 0.2 3.9 0.2 5.0 0 0.2 3.9 0.2 5.0 0 0.2 0 4.9 5.0 0 0.2 0 0.2 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	FEV 4.9 5.0 0.2 0 0.2 3.9 0.2 5.0 0.2 0 0.2 5.0 0.2 0	F.A 4.9 0 4.8 5.0 4.9 0 0.2 3.9 0.2 5.0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 4.9 0 5.0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 4.9 0 5.0 0 6.0 0 0 6.0 0 0 0

PIN

						_										
	108	6201				PIN				106	204				PIN	
W	REC	P.B	CUE	REV	F.A	NO.	STOP	F.F	REW	REC	P.B	CUE	REV	F.A	NO.	STOP
-	0	0	0	0	0	PIN 1	0.3	0.3	0.3	9.0	9.0	9.0	9.0	9.0	PIN 1	5.1
. 2		0.2	0.2		0.2	PIN 2	0	0	0.5				0	0	PIN 2	0
	0.2		4.2	0.2	0.1	1				3.6	0	0		-		0
. 1	0.1	0.1	-	4.2		-	9.1	9.1	9.1	9.0	9.0	9.0	9.0	9.0	PIN 3	0.1
.0	0	0	0	0	0	PIN 4	0.1	0.1	0.1	4.6	4.6	4.6	4.6	4.6	PIN 4	
	0	0	0	0	0	PIN 5°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	PIN 5	4.4
. 1	0.1	0.1	0.1	0.1	0.1	PIN 6	0	0	0	0	0	0	0	9.0	PIN 6	6.5
. 1	4.6	4.6	4.6	4.6	4.6	PIN 7	0	0	0	0	0	0	0	0	PIN 7	0
	0	0	0	0	0	PIN 8	-0.5	-0.4	-0.6	5.0	-0.5	-0.4	-0.4	-0.4	PIN 8	0
. 2	0.2	0.2	0.2	0.2	0.2	PIN 9	4.5	4.5	4.5	0.1	4.5	4.5	4.5	4.5	PIN 9	5.0
.9	4.9	4.9	4.9	4.9	4.9	PIN 10	5.1	5.0	5.0	5.0	5.0	5.0	5.0	0.3	PIN 10	0
		4.9	4.9	4.9	4.9	PIN 11									PIN 11	0
.9	4.9			4.9		PIN 12	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		0
.9	4.9	4.9	4.9		4.9	1	0	0	0	0	0	0	0	0	PIN 12	
.9	4.3	4.3	3.9	3.9	4.3	PIN 13	5.1	5.1	5.1	5.0	5.0	5.0	5.0	5.0	PIN 13	0
.8	-	4.9	4.9	0	4.9	PIN 14	0.3	0.3	0.3	0	0	0	0	4.9	PIN 14	4.4
.9	4.8	4.8	4.9	4.9	4.8	PIN				106	5205		-			
.9	4.9	4.9	0.2	0.2	4.9	NO.	STOP	F.F	DEL.			CHE	DEV	F A		
.3	0.2	0.2	0.2	0.2	0.2	PIN 1			REW	REC	P.B	CUE	REV	F.A		
	0	0	0	0.1	0		6.2	0.1	0.1	0.1	0.1	0.1	0	0.1		
. 1	0.1	0.1	0.1	0.1	0	PIN 2	-	6.1	6.1	6.2	6.1	6.2	6.2	6.2		
	0	0	0.1	0.1	0	PIN 3	11.8	11.6	11.6	11.7	11.6	11.6	11.6	11.6		
	0	0	0			PIN 4	2.9	2.9	2.9	2.9	2.9	2.8	2.9	2.8		
6		0.1	0.1	0	0	PIN 5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
. 6	0.1	+	+	4.5	0.1	PIN 6	5.8	5.7	5.7	5.7	5.7	5.7	5.7	5.7		
4	4.4	4.4	4.4	4.4	4.4	PIN 7	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9		
2	0.2	0.2	0.2	0.2	0.2	PIN 8	0.6	0.6	0.6	0.6	0.6	0.6	0.6			
2	0.2	0.2	0.2	0.2	0.2	PIN 9	0	0	0	0.0	0.0	0.0	0.0	0.6		
	0	0	0	0	0	PIN 10								_0		
	0	*	5.0	5.0	*	-	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8		
	0	0	0	Q	0	PIN 11	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
8	0	0	0		0	PIN 12	0	0	0	0	0	0	0	0		
5		2.5	2.5	0	2.5	PIN 13	5.0	5.0	5.0	5.0	5.0	0	5.0	5.0		
	2.5			0.1	*	PIN 14	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
1	4.3	4.3	0.1	1												
1	5.0	5.0	5.0	0.1	5.0											
7	4.7	4.7	4.7	4.7	0											
7	4.7	4.7	0.1	4.7	4.7											
4	0.2	0.2	0.2	0.2	0.2											
5	0.1	4.5	4.5	4.5	4.5											
0	5.0	5.0	5.0	5.0	5.0											
	5.0			5.0	0.1											
0	5.0	5.0	5.0													
8	-	5.0	5.0	5.0	5.0											
0	1.8	1.8	1.8	1.8	1.8											
	106	202														
W	REC	P.B	CUE	REV	F.A											
9	4.9	4.9	4.9	4.9	4.9											
_					0						JA					
_	4.3	4.3	4.3	4.3	4.8							SCAN	OUT	0.1		
9	4.9	5.0	4.9	4.9							-					
0	0	0	5.0	5.0	0								OFF	(H)		
9	0	4.8	4.9	4.9	4.8							SCAN		C /		
0	5.0	5.0	5.0	5.0	5.0						4	SAFET	Y TAI	BON	(H)	
9	4.9	0	0	0.2	4.9						5	SCAN	IN	В <i>Ф</i>		
	0	0	0	0	0							SCAN		В3		
2					0.2			3				JUNIT	. 11			
3	0.2	0.2	0.2	0.2	3.9											
0	3.9	3.9	3.9	3.9												
3	0.2	0.2	0.2	0.2	0.2							7 (1986)				
0	5.0	5.0	5.0	5.0	5.0											
9	4.9	4.9	0.2	0.2	4.9				1		_	ACCULATION				
	0	0	0	0	0				P						A	
9	4.9	4.9			4.9							R66 1	OK		7	
			4.9	4.9	0					6	J22	121.	_	1		б
1	5.1	5.0	5.0	5.0			-			2	1	J21				200 ES
	1062									and the same of		W-	-			OL
N	REC	P.B	CUE	REV	F.A					1	R	86 33	00	R49 2	2K C7	0.120
2	4.9	4.9	4.9	4.9	4.9				R64	ZR89	124	R62 47	K	R92 10		DI
)	5.0	5.0	5.0	5.0	0.5				22K	₹89 \$56K	-	-W-	-0	R51 2		
3	4.9	4.9	4.9	4.9	4.8						1	R68 56	00		2SD636	1100
-	0	0	0		0				C 13	16710	0	R75 2	2K 0	CO	220036	<u>C8</u>
	4.8	4.8	4.9	0	4.8				3.10	-	35	12	7 10	(1)	9 (3)	3 6
)	-			4.9						6	020	12				
	4.9	4.9	4.9	4.9	4.9			1			7	21	701		200	31
	4.9	4.9	0.2	0.2	4.9		4	2			W-0	1	MIT WALL		The said	W108
	0	0	0	0	0						22K		-		UA	0
				-						126		3			L C 1	



			,															,						,			,						,		
		PIN			,	10	6206	,			STOP			STOP F.F				REW			REC			P.B			CUE			REV			F.A		
REV	F.A	NO.	STOP	F.F	REW	REC	P.B	CUE	REV	F.A		E	В	С	E	В	С	E	В	С	Е	В	С	E	В	С	E	В	С	E	В	С	Ε	В	С
9.0	9.0	PIN 1	5.1	0.6	5.1	5.0	5.0	5.0	5.0	5.0	Q6201	5.8	6.3	11.8	5.7	6.2	11.6	5.7	6.2	11.6	5.7	6.2	11.7	5.7	6.2	11.6	5.7	6.2	11.6	5.7	6.2	11.6	5.7	6.2	11.6
0	0	PIN 2	0	3.0	0	7.9	1.0	1.0	1.0	1.0	Q6202	0	0	11.8	0	0.1	11.6	0	0.1	11.6	0	0.1	11.6	0	0.1	11.6	-0.1	0.1	11.6	0	0.1	11.6	0	0.1	11.6
9.0	9.0	PIN 3	0	5.1	0	0	0	0	0	0	Q6203	0	0	5.0	0	0	5.0	0	0	5.0	0	0		0	0	5.0	0	0	5.0	0	0	5.0	0	0	4.9
4.6	4.6	PIN 4	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	Q6204	5.1	8.0	0	5.1	8.0	-0.3	5.1	8.0	-0.3	5.0	7.9	-0.3	5.0	7.9	-0.3	5.0	5.7	-0.3	4.4	3.8	4.4	0.7	0	0.7
0.1	0.1	PIN 5	4.4	5.1	4.4	0.2	0.2	0.2	0.2	0.2	Q6205	7.9	8.0	0	7.9	8.0	0	7.9	8.0	0	7.9	7.9	0	7.9	7.9	.0	6.3	5.7	4.1	4.4	3.8	4.4	0.7	0	0.7
0	9.0	PIN 6	6.5	0.8	6.4	6.5	6.4	6.4	6.4	6.4	Q6206	0	-0.4	2.5	0	-0.4	2.5	0	-0.4	2.5	0	-0.4	2.5	0	0	2.5	0	-0.4	2.5	0	-0.4	2.5	0	-0.4	2.5
0	0	PIN 7	0	0.1	0.1	5.0	5.0	5.0	5.0	5.0	Q6207	0	-0.4	2.0	0	-0.4	2.0	0	-0.4	2.0	0	-0.4		0	0	2.0	0	-0.4	2.0	0	-0.4	2.0	0	0	2.0
4 -0.4	-0.4	PIN 8	0	0.2	0	0	0	0	0	0	Q6208	0	0	8.0	0	0	8.0	0	0		0	0	7.9	0	0	7.9	0	0	5.7	0	0	3.8	0	0	0
4.5	4.5	PIN 9	5.0	4.0	4.9	4.9	4.9	4.9	4.9	4.9	Q6209	0	0.7	0.1	0	0.6	2.1	0	0.6	2.0	0	0.7	0	0	0.7	0.1	0	0.6	1.9	0	0.6	1.9	0	0.7	0.1
5.0	0.3	PIN 10	0	0	0	0	0	0	0	0	Q6210	0.2	0.1	11.1	2.0	2.1	11.0	2.0	2.0	11.0	0.3	0.1	11.0	*	0.1	11.0	1.9	1.9	11.0	1.9	1.9	11.0	*	0.1	11.0
5.0	5.0	PIN 11	0	5.1	0	0	0	0	0	0	Q6211	0	0.1	4.9	4.0	4.5	4.0	4.0	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0
0	0	PIN 12	0	11.6	0	0	0	0	0	0	Q6212	0.3	0.1	4.1	-0.1	0.1	4.1	0	0,1	4.1	0.4	0.1	4.1.	0.4	0.1	4.1	0.4	0.1	4.1	0.4	0.1	4.1	0.4	0.1	4.1
5.0	5.0	PIN 13	0		3.8	0	0	0	0	0	Q6213	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	0	0	4.9	0	0.6	0	0	0.6	0	0	0,2	4.9
0	4.9	PIN 14	4.4		4.4	4.4	4.4	4.4	4.4	4.4	Q6214	5.1	5.0	0	5.1	5.0	0	5.1	5.0	0	5.0	5.0	0	5.0	5.0	0	5.0	4.4	5.0	5.0	4,4	5.0	5.0	5.0	0
											Q6215	0	0	0.3	0	0	0.3	0	0	0.4	0	0	0.4	0	0	0.4	0	0.3	0.5	0	0.3	0.4	0	0	0.3
REV	F.A										Q6216	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1
0	0.1										Q6217	0	0	0.8	4.0	0	3.8	4.0	0	3.7	3.9	0	3.7	3.9	0	3.7	3.9	0	3.7	3.9	0	3.7	3.9	0	3.7
6.2	6.2																																		
6 11.6	11.6																																		
2.9	2.8																																		
3.0	3.0																																		
5.7	5.7																																		
4.9	4.9																																		
0.6	0.6																																		
0	0																																		
2.8	2.8																																		
3.0	3.0																																		
0	0																																		
5.0	5.0																																		
	0.1																																		
				(SY	ST	EV	A C	0:	NT	ROI	(1	1	SF	C	TIC	M																		
						-				41		- 11		O L	-0																				
				T.	SY	ST	EV	VI C	0:	NT	ROI		B	Δ	(V	FP	SI	02	64	111															
				F.						- 41 11		_			1 0			02		"/1															



IN B3

	J	В		
	ı	STOP	(L)	
	2	REW	(L)	
	3	FF	(L)	
-	1	PLAY	(L)	
	5	REC	L	
	2	G N	D	

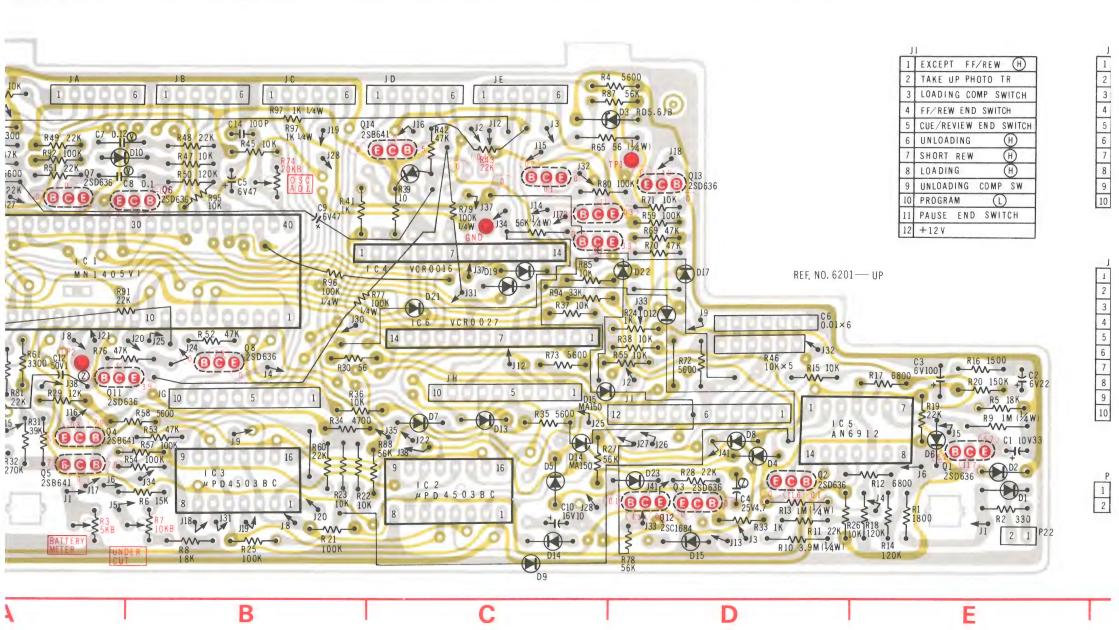
REF. NO.: 6200 SERIES

	C
1	DATA IN BI
2	DATA IN B2
3	SCAN OUT C2
4	SCAN OUT C3
5	POWER ON (L)
6	SP/LP/SLP SELECT

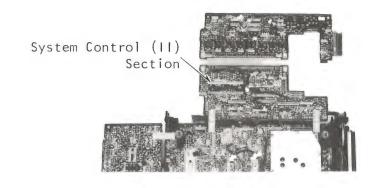
1	INPUT SE	LECT	SW
2	PROGRAM	H	
3	CUE	H	
4	REVIEW	H	
5			
6	TUNER	(H)	

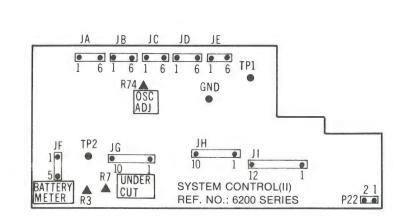
1	+12 V
2	+12V (FOR +5V)
3	AUDIO DUB
4	+ 5 V
5	DEW LED
6	PAUSE LED

j	F
1	SAFETY TAB SWITCH
2	SUPPLY PHOTO TR
3	SENSOR LAMP
4	AUDIO DUB (H)
5	REC/AUDIO DUB

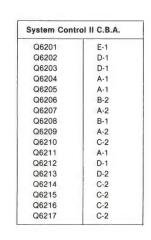


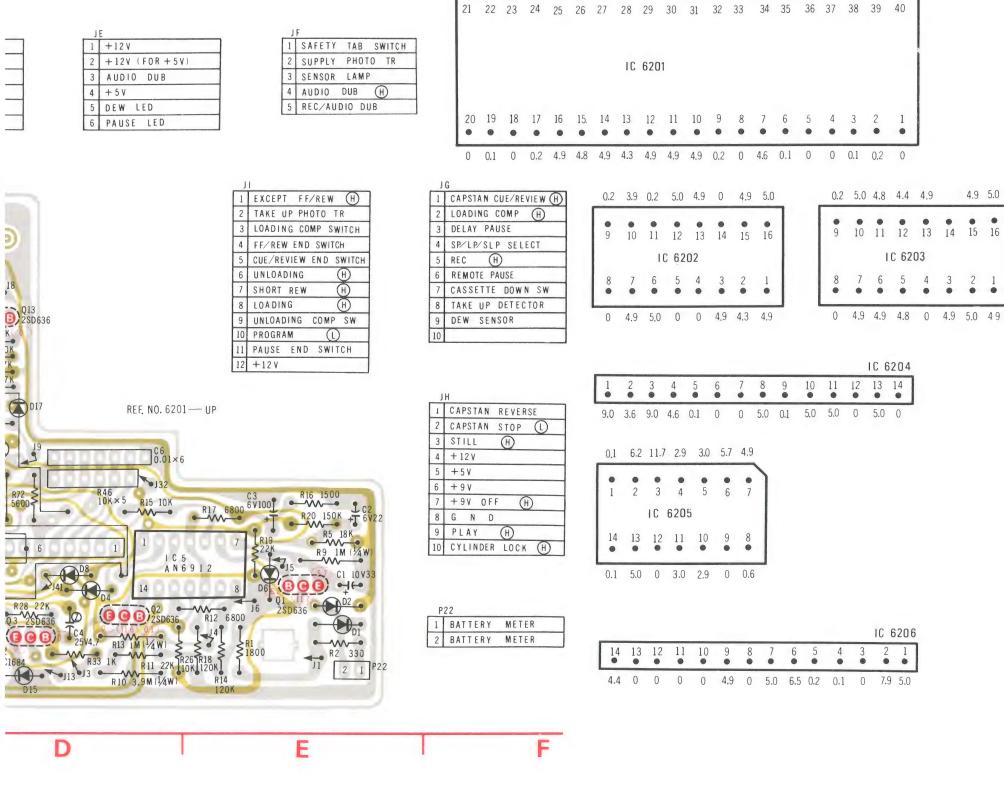
REC		P.B			CUE			REV			F.A		
В	С	E	В	C	E	В	С	E	В	С	Ε	В	С
6.2	11.7	5.7	6.2	11.6	5.7	6.2	11.6	5.7	6.2	11.6	5.7	6.2	11.6
0.1	11.6	0	0.1	11.6	-0.1	0.1	11.6	0	0.1	11.6	0	0.1	11.6
0		0	0	5.0	0	0	5.0	0	0	5.0	0	0	4.9
7.9	-0.3	5.0	7.9	-0.3	5.0	5.7	-0.3	4.4	3.8	4.4	0.7	0	0.7
7.9	0	7.9	7.9	.0	6.3	5.7	4.1	4.4	3.8	4.4	0.7	0	0.7
-0.4	2.5	0	0	2.5	0	-0.4	2.5	0	-0.4	2.5	0	-0.4	2.5
-0.4	0	0	0	2.0	0	-0.4	2.0	0	-0.4	2.0	0	0	2.0
0	7.9	0	0	7.9	0	0	5.7	0	0	3.8	0	0	0
0.7	0	0	0.7	0.1	0	0.6	1.9	0	0.6	1.9	0	0.7	0.1
0.1	11.0	*	0.1	11.0	1.9	1.9	11.0	1.9	1.9	11.0	*	0.1	11.0
4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0	3.9	4.5	4.0
0.1	4.1.	0.4	0.1	4.1	0.4	0.1	4.1	0.4	0.1	4.1	0.4	0.1	4.1
0	4.9	0	0	4.9	0	0.6	0	0	0.6	0	0	0.2	4.9
5.0	0	5.0	5.0	0	5.0	4.4	5.0	5.0	4.4	5.0	5.0	5.0	0
0	0.4	0	0	0.4	0	0.3	0.5	0	0.3	0.4	0	0	0.3
0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0.2	0.1	0	0,2	0.1
0	3.7	3.9	0	3.7	3.9	0	3.7	3.9	0	3.7	3.9	0	3.7





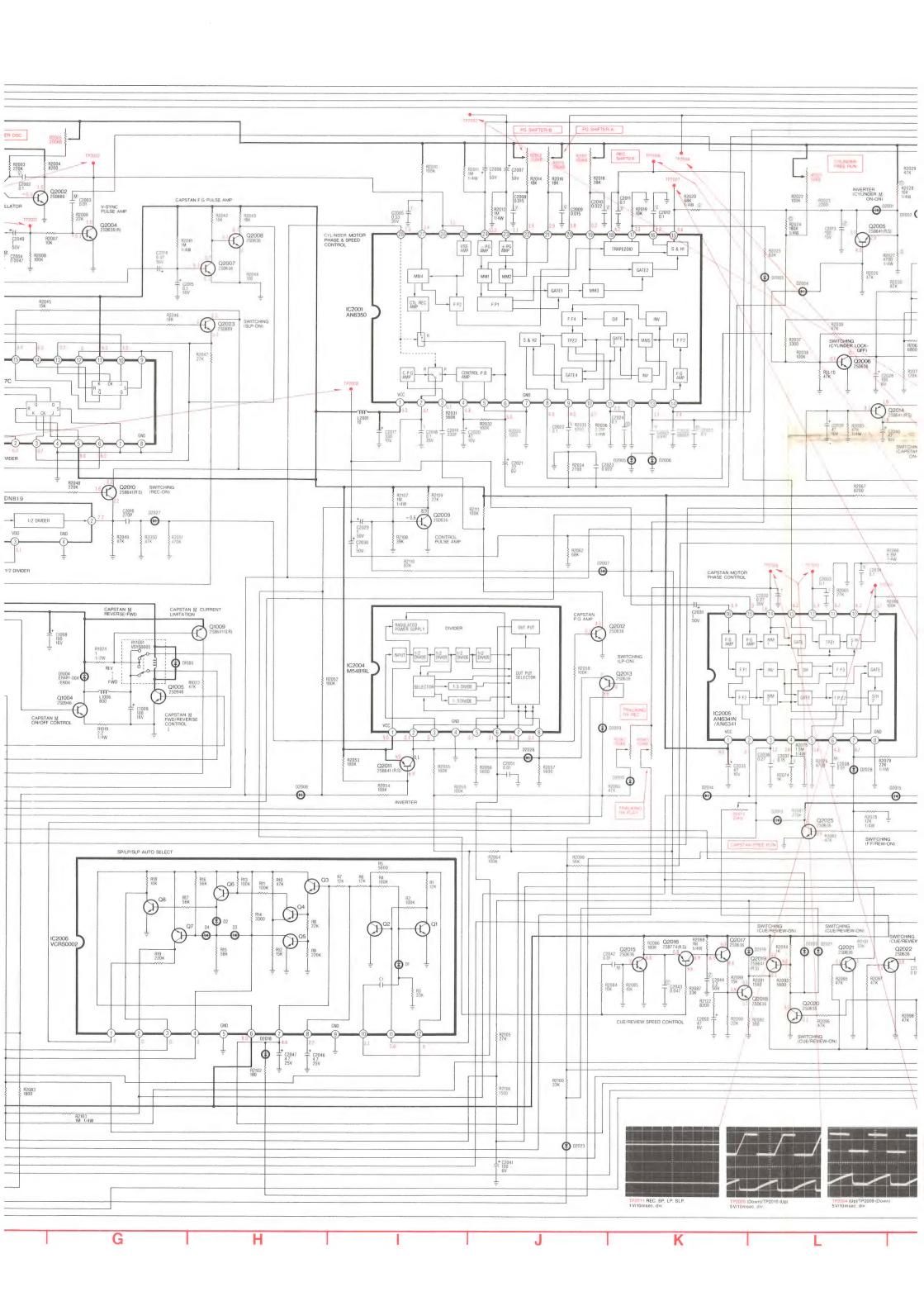
0 0.1 4.4 0.2 0.2 0 0 0 0 2.5 4.3 5.0 4.7 4.7 0.2 0.1 5.0 5.0 5.0 1.8

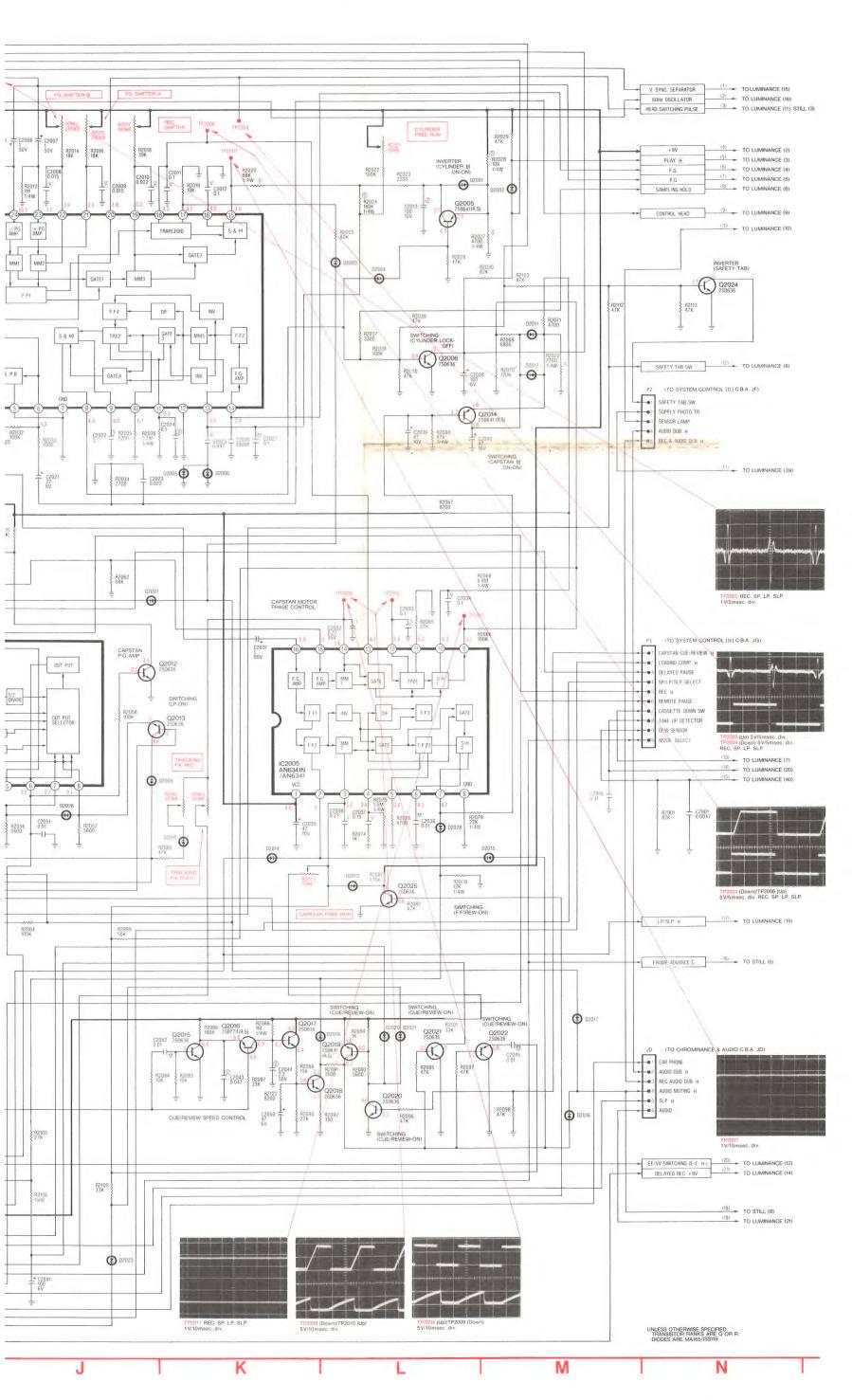




4-6 SERVO & A.V.R. SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE





	1A /8	Asia C B A)	
	JA (n	Main C.B.A)	
PIN NO.	SIGNAL NAME		DESTINATION
1	Play FM	JA-1	Chrominance & Audio C.B.A
2	Video	JA-2	Chrominance & Audio C.B.A
3	LP/SLP (H)	JA-3	Chrominance & Audio C.B.A
4	+9V	JA-4	Chrominance & Audio C.B.A
5	3.58 MHz	JA-5	Chrominance & Audio C.B.A
6	Except REC +9V	JA-6	Chrominance & Audio C.B.A

	JB (F	Main C.B.A)	
PIN NO.	SIGNAL NAME		DESTINATION
1	REC +9V	JB-1	Chrominance & Audio C.B.A
2	D.O.C Pulse	JB-2	Chrominance & Audio C.B.A
3	Video (For HSS)	JB-3	Chrominance & Audio C.B.A
4	REC Chroma	JB-4	Chrominance & Audio C.B.A
5	Play Chroma	JB-5	Chrominance & Audio C.B.A
6	60 Hz Oscillator	JB-6	Chrominance & Audio C.B.A

	JC (Ma	in C.B.A)	
PIN NO.	SIGNAL NAME		DESTINATION
1	Head Switching Pulse	JC-1	Chrominance & Audio C.B.A
2	V. Sync Separator	JC-2	Chrominance & Audio C.B.A
3	Safety TAB +9V	JC-3	Chrominance & Audio C.B.A
4	LP (H)	JC-4	Chrominance & Audio C.B.A
5	GND	JC-5	Chrominance & Audio C.B.A
6	EE-VV Switching (E-E (H))	JC-6	Chrominance & Audio C.B.A

PIN NO	Э.	SIGN	IAL NA	ME			DESTIN	ATION		
1	He	ad Swite	ching F	ulse	JC-1	С	hrominance	& Aud	io C.B.	A
2	V.	Sync Se	parato		JC-2	C	hrominance	& Aud	io C.B.	Α
3	Sa	fety TAE	+9V		JC-3	C	hrominance	& Aud	io C.B.	Α
4	LP	(H)			JC-4	C	hrominance	& Aud	io C.B.	Α
5	G	ND			JC-5	C	hrominance	& Aud	io C.B.	Α
6	EE	-VV Swit	ching	E-E (H))	JC-6	CI	hrominance	& Aud	io C.B.	Α
		REC			P.B		PIN	1020	001	
	E	В	С	E	В	С	NO.	REC	P.B	
2001	0	-16	7 2	0	-1 6	7 2	PIN 1	9.0	9.0	

		REC			P.B		PIN	102	100	PIN	102	002	PIN	102	005
	E	В	С	E	В	С	NO.	REC	P.B	NO.	REC	P.B	NO.	REC	P.1
Q2001	0	-1.6	7.2	0	-1.6	7.2	PIN 1	9.0	9.0	PIN 1	3.0	3.0	PIN 1	9.0	9.
Q2002	0	-0.3	1.0	0	-0.3	1.0	PIN 2	0.7	4.6	PIN 2	6.0	6.0	PIN 2	0	0
Q2003	0	0	0.9	0	0.6	0	PIN 3	0.7	0.7	PIN 3	0.7	0.8	PIN 3	1.2	1.
Q2004	0	-0.1	1.0	0	-0.1	1.0	PIN 4	5.8	1.5	PIN 4	0	0	PIN 4	2.4	2.
Q2005	2.9	4.0	3.0	2.9	4.0	3.0	PIN 5	0	0	PIN 5	9.0	9.0	PIN 5	0.4	0.
Q2006	0	0.6	0	0	0.6	0	PIN 6	5.0	1.5	PIN 6	6.0	6.0	PIN 6	4.3	4.
Q2007	0.1	0.1	0.7	0.1	0.1	0.7	PIN 7	0	0	PIN 7	0	0	PIN 7	4.7	4.
Q2008	0	0.7	0.7	0.1	0.7	0.8	PIN 8	4.5	4.5	PIN 8	0	0	PIN 8	0	0
Q2009	0	-0.6	8.9	0	-0.6	8.8	PIN 9	4.0	4.0	PIN 9	0	0	PIN 9	3.7	3.7
Q2010	2.2	1.6	2.2	3.0	8.7	3.7	PIN 10	0.7	0.7	PIN 10	3.0	3.0	PIN 10	4.2	4.:
Q2011	9.0	8.9	0.1	9.0	8.9	0.2	PIN 11	2.0	2.0	PIN 11	9.0	9.0	PIN 11	3.2	3.2
Q2012	0	0.3	4.5	0	0.2	5.8	PIN 12	0	0	PIN 12	0	0	PIN 12	3.9	3.9
Q2013	0	0	8.6	0.1	0	0.7	PIN 13	1.3	0	PIN 13	0.7	0.8	PIN 13	4.2	4.2
Q2014	1.6	3.2	1.6	1.6	3.2	1.6	PIN 14	2.4	2.4	PIN 14	6.0	6.0	PIN 14	1.6	1.6
Q2015	0	0	6.6	0	0	6.6	PIN 15	3.6	3.6	PIN 15	3.0	3.0	PIN 15	0	0
Q2016	6.6	8.9	6.9	6.6	8.9	6.7	PIN 16	4.2	4.2	PIN 16	9.0	9.0	PIN 16	5.9	5.9
Q2017	6.4	6.9	9.0	6.3	6.8	9.0	PIN 17	3.3	3.3	PIN	IC2	2003	PIN	102	006
Q2018	0.1	0.8	0.1	0.1	0.8	0.1	PIN 18	4.2	4.2	NO.	REC	P.B	NO.	REC	Ρ.
02019	9.0	9.0	0.1	9.0	9.0	0.1	PIN 19	0.2	0.2	PIN 1	0.1	0.4	PIN 1	0	0
Q2020	0	0.1	9.0	0	0.1	9.0	PIN 20	3.8	3.8	PIN 2	2.2	3.7	PIN 2	0	0
Q2021	0	0.1	0	0	0.1	0	PIN 21	3.9	3.9	PIN 3	0.1	8.9	PIN 3	0	0
Q2022	0.8	0.1	0	0.8	0.1	0	PIN 22	3.9	3.9	PIN 4	0	0	PIN 4	0	0
02023	0.7	0	2.2	0.8	0	3.0	PIN 23	-1.1	-1,1	PIN	102	004	PIN 5	0	0
Q2024	0	0.7	0	0	0.6	0	PIN 24	10.3	10.3	NO.	REC	P.B	PIN 6	9.0	9.
Q2025	0	0.6	0	0	0.6	0	PIN 25	1.0	1.3	PIN 1	9.0	9.0	PIN 7	4.4	5.
Q2026	0	0.7	0	0	0.7	0	PIN 26	1.0	0	PIN 2	-	0.2	PIN 8	2.2	4.
Q2027	0	0.6	0	0	0.6	0	PIN 27	2.9	2.9	PIN 3	0,1	0	PIN 9	0	0
							PIN 28	7.9	1.0	PIN 4	0	0	PIN 10	2.1	1.
										PIN 5	0	0.7	PIN 11	0.6	0.
										PIN 6	0.7	1.5	PIN 12	0	8.
										PIN 7	0.1	0.2			
										PIN 8	0.1	0.1			

P1 P2 P2 TP8 TP3 GND	P3 SERVO SECTION REF. NO.: 2000 SE	P4 10 1	A.V.R. SECTION REF. NO.: 1000 SERIES
1D TP6	• TP1	P10 TP11	● TP 2 ● TP1
P1	10 1 P3	P4 10 1	A.V.R 12 1 P5

P1 6 1 5 P2	10 1 P4 A.V.R P5
SERVO SECTION REF. NO.: 2000 SERIES	A.V.R. SECTION REF. NO.: 1000 SERIES
P.G.B R13 A R15 P.G.A JD A R17 REC.S R21 CYL.F	R73 CAP.F R63 FIX P.B R61 FIX REC R14 SY ADJ

	P6 (M	Main C.B.A)
PIN NO.	SIGNAL NAME		DESTINATION
1	GND	JH	Jack Panel C.B.A
2	Audio	JG	Jack Panel C.B.A
3	GND	JF	Jack Panel C.B.A
4	External + 12V	JB	Jack Panel C.B.A
5	Video	JP	Jack Panel C.B.A
6	GND	JQ	Jack Panel C.B.A
7	Audio	JU	Jack Panel C.B.A
8	Video	JS	Jack Panel C.B.A
9	GND	JR	Jack Panel C.B.A
10	Input Select	JY	Jack Panel C.B.A
11	Tuner (H)	JL	Jack Panel C.B.A
12	Charge Mode	JA	Jack Panel C.B.A

	P7 (A	Main C.B.	4)
PIN NO.	SIGNAL NAME		DESTINATION
1	Loading Comp SW	5	Mode Select SW C.B.A
2	FF/REW End SW	1	Mode Select SW C.B.A
3	Unloading Comp SW	2	Mode Select SW C.B.A
4	CUE/Review End SW	3	Mode Select SW C.B.A
5	Pause End SW	4	Mode Select SW C.B.A

	P8 (M	flain C.B.A)
PIN NO.	SIGNAL NAME	DESTINATION
1	Capstan Motor ⊖	Capstan Motor C.B.A
2	Capstan Motor ⊕	Capstan Motor C.B.A
3	GND	Capstan Motor C.B.A
4	GND	Capstan Motor C.B.A
5	Capstan FG	Capstan Motor C.B.A

A.V.R. Sectio	n C.B.A.
Q1001	G-5
Q1002	F-5
Q1003	G-5
Q1004	G-5
Q1005	G-6
Q1006	E-6
Q1007	E-5
Q1008	F-4
Q1009	G-6

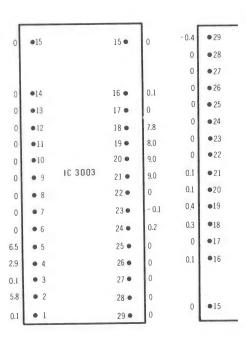
	1
IC2001	B-5
IC2002	D-6
IC2003	D-5
IC2004	C-6
IC2005	E-5
IC2006	D-5
Q2001	C-5
Q2002	C-5
Q2003	D-4
Q2004	C-4
Q2005	C-4
Q2006	E-6
Q2007	D-6
Q2008	D-6
Q2009	C-6
Q2010	C-5
Q2011	C-6
Q2012	C-5
Q2013	D-6
Q2014	D-4
Q2015	E-5
Q2016	E-5
Q2017	E-5
Q2018	E-6
Q2019	E-5
Q2020	D-5
Q2021	D-5
Q2022	D-5
Q2023	D-6
Q2024	C-4
Q2025	E-6
Q2026	C-5
Q2027	D-6

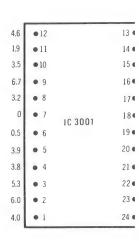
	P9 (N	Main C.B.	A)
PIN NO.	SIGNAL NAME		D
1	Loading (H)	1	Loadin
2	Except FF/REW (H)	2	Loadin
3	GND	3	Loadin
4	Short REW (H)	4	Loadin
5	Unloading (H)	5	Loadin
6	+ 12 V	6	Loadin
7	Loading (H)	7	Loadin
8	Unloading Comp SW	8	Loadin

SERVO & A.\



7.9	•28		1 •	9.0
2.9	•27		2 •	0.7
1.0	•26		3 •	0.7
1.0	•25		4 •	5.8
0.3	• 24		5 •	0
1.1	•23		6 •	5.0
3.9	• 22	IC 2001	7 •	0
3.9	• 21		8 •	4.5
3.8	• 20		9 •	4.0
0.2	• 19		10 •	0.7
4.2	• 18		11 •	2.0
3,3	• 17		12 •	0
4.2	• 16		13 •	1.3
3.6	• 15		14 •	2.4
				-





P9 (M	Main C.B.	4)
NAME		DESTINATION
	1	Loading Motor Drive C.B.A
W (H)	2	Loading Motor Drive C.B.A
	3	Loading Motor Drive C.B.A
)	4	Loading Motor Drive C.B.A
	5	Loading Motor Drive C.B.A
	6	Loading Motor Drive C.B.A
	7	Loading Motor Drive C.B.A
mn SW	8	Loading Motor Drive C.B.A.

P13 (Main C.B.A)		
PIN NO.	SIGNAL NAME	DESTINATION
1	Control Head	Audio/Control Head C.B.A
2	GND	Audio/Control Head C.B.A
3	Sensor Lamp	Audio/Control Head C.B.A

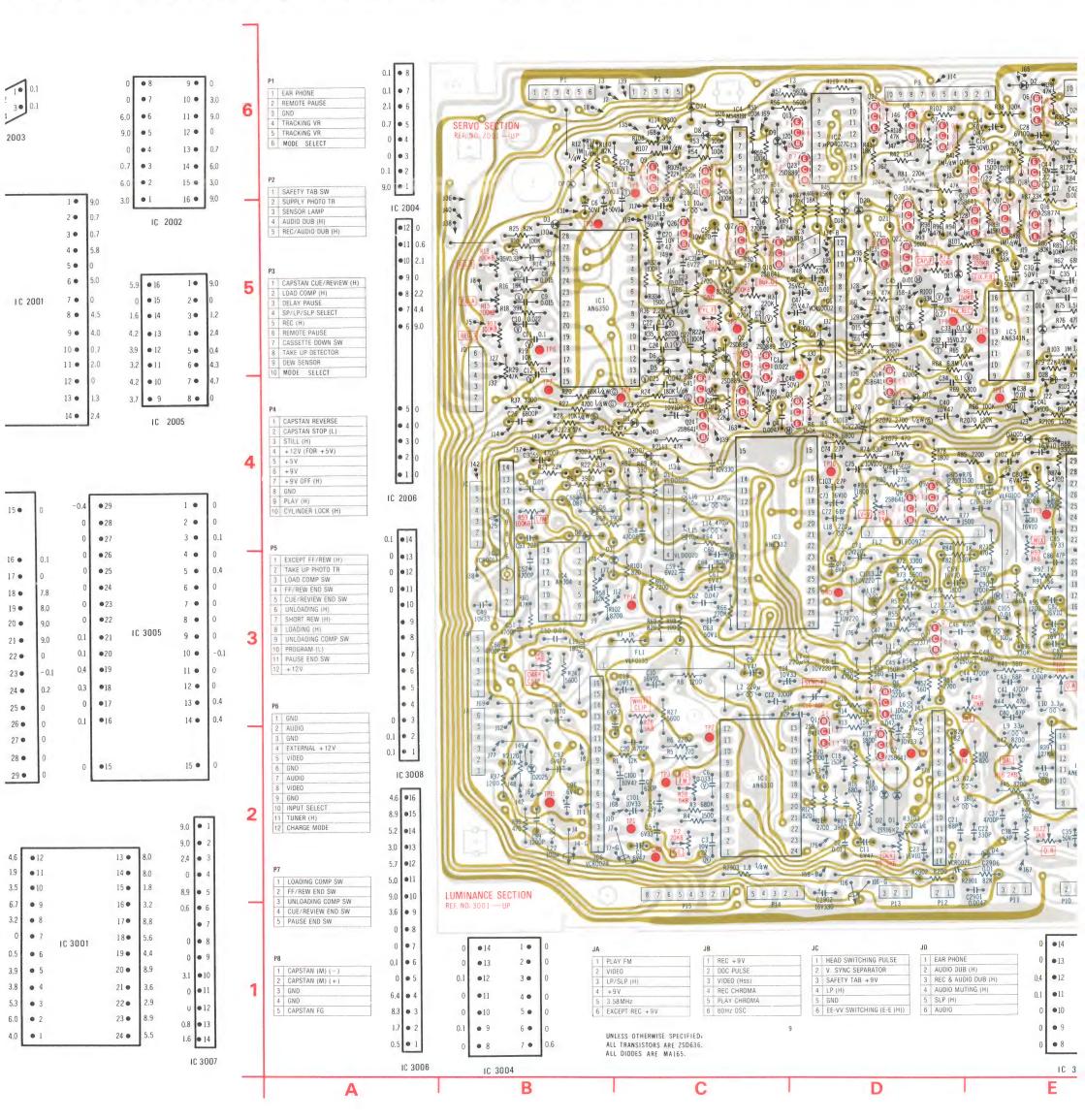
P14 (Main C.B.A)		
PIN NO.	SIGNAL NAME DEST	
1	_	_
2	+9V	Safety TAB SW C.B.A
3	GND	Cassette Down SW C.B.A
4	Cassette Down SW	Cassette Down SW C.B.A
5	Safety TAB SW	Safety TAB SW C.B.A

P15 (Main C.B.A)			
PIN NO.	PIN NO. SIGNAL NAME		DESTINATION
1	_	_	_
2	+ 12 V	JB	D-D Cylinder Drive C.B.A
3	GND	JC	D-D Cylinder Drive C.B.A
4	+9V	JD	D-D Cylinder Drive C.B.A
5	Play (H)	JE	D-D Cylinder Drive C.B.A
6	FG	JF	D-D Cylinder Drive C.B.A
7	Cylinder PG	JG	D-D Cylinder Drive C.B.A
8	Sampling Hold	JH	D-D Cylinder Drive C.B.A

PIN NO.	:
1	GND
2	Video
3	+9V
4	Audio
5	Chann
6	Chann

IMPORTANT S Components is characteristics When replacin original ones.

ERVO & A.V.R SECTION [MAIN C.B.A (VEPS0312A)] SERVO SECTION: REF. NO.: 2000 SERIES/A.V.R SECTION: REF.



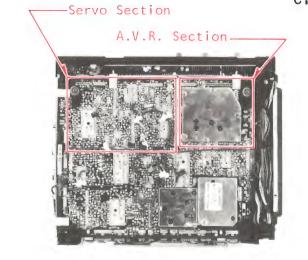
P15 (Main C.B.A)		
GNAL NAME		DESTINATION	
	_	_	
	JB	D-D Cylinder Drive C.B.A	
	JC	D-D Cylinder Drive C.B.A	
	JD	D-D Cylinder Drive C.B.A	
	JE	D-D Cylinder Drive C.B.A	
	JF	D-D Cylinder Drive C.B.A	
PG	JG	D-D Cylinder Drive C.B.A	
g Hold	JH	D-D Cylinder Drive C.B.A	

	P20 (F	Main C.B.	A)
PIN NO.	SIGNAL NAME		DESTINATION
1	GND	1	RF Converter C.B.A
2	Video	2	RF Converter C.B.A
3	+9V	3	RF Converter C.B.A
4	Audio	4	RF Converter C.B.A
5	Channel Select (CH4)	5	RF Converter C.B.A
6	Channel Select (CH3)	6	RF Converter C.B.A

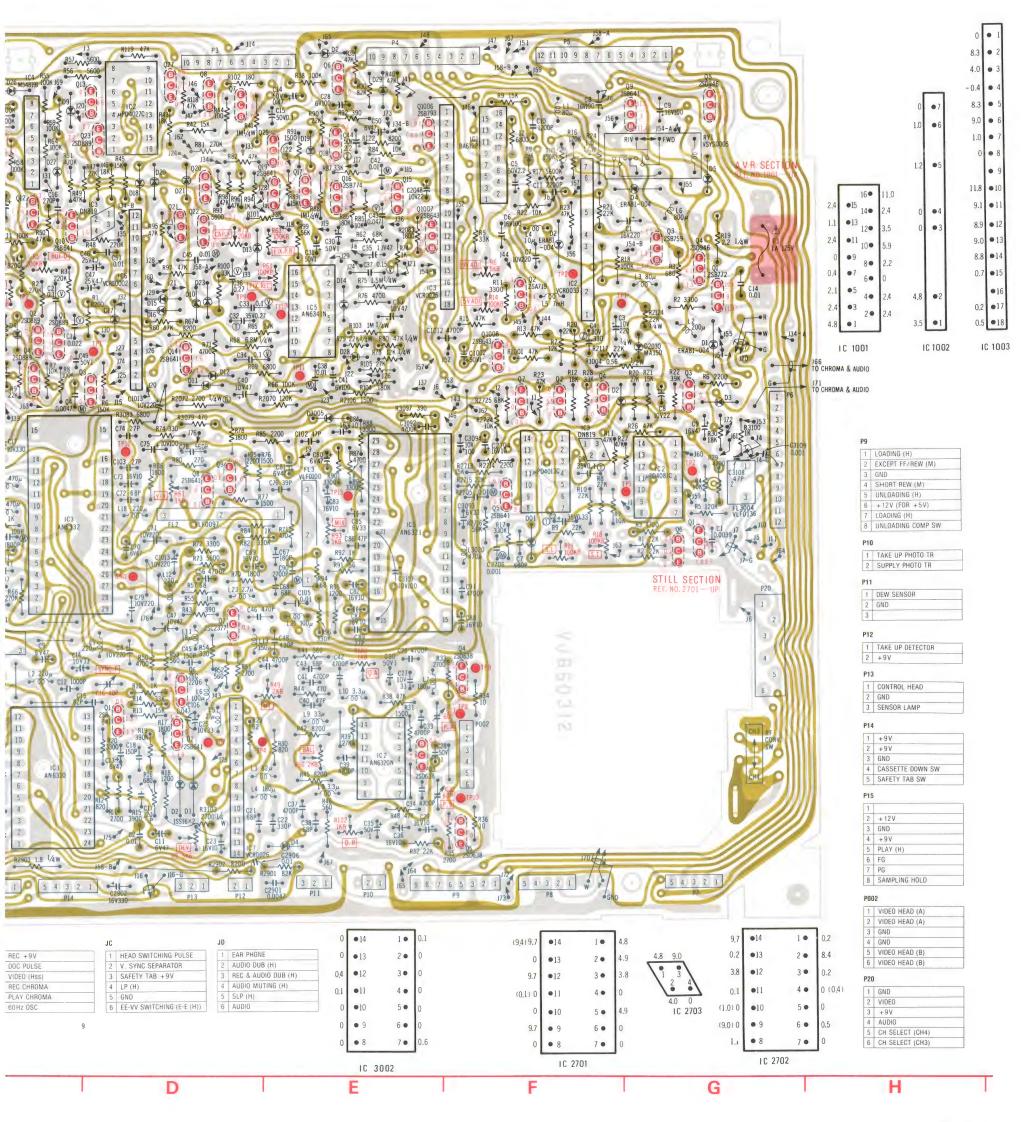
IMPORTANT SAFETY NOTICE

Components identified by shade have special characteristics important for safety.

When replacing any of these components, use only the original ones.



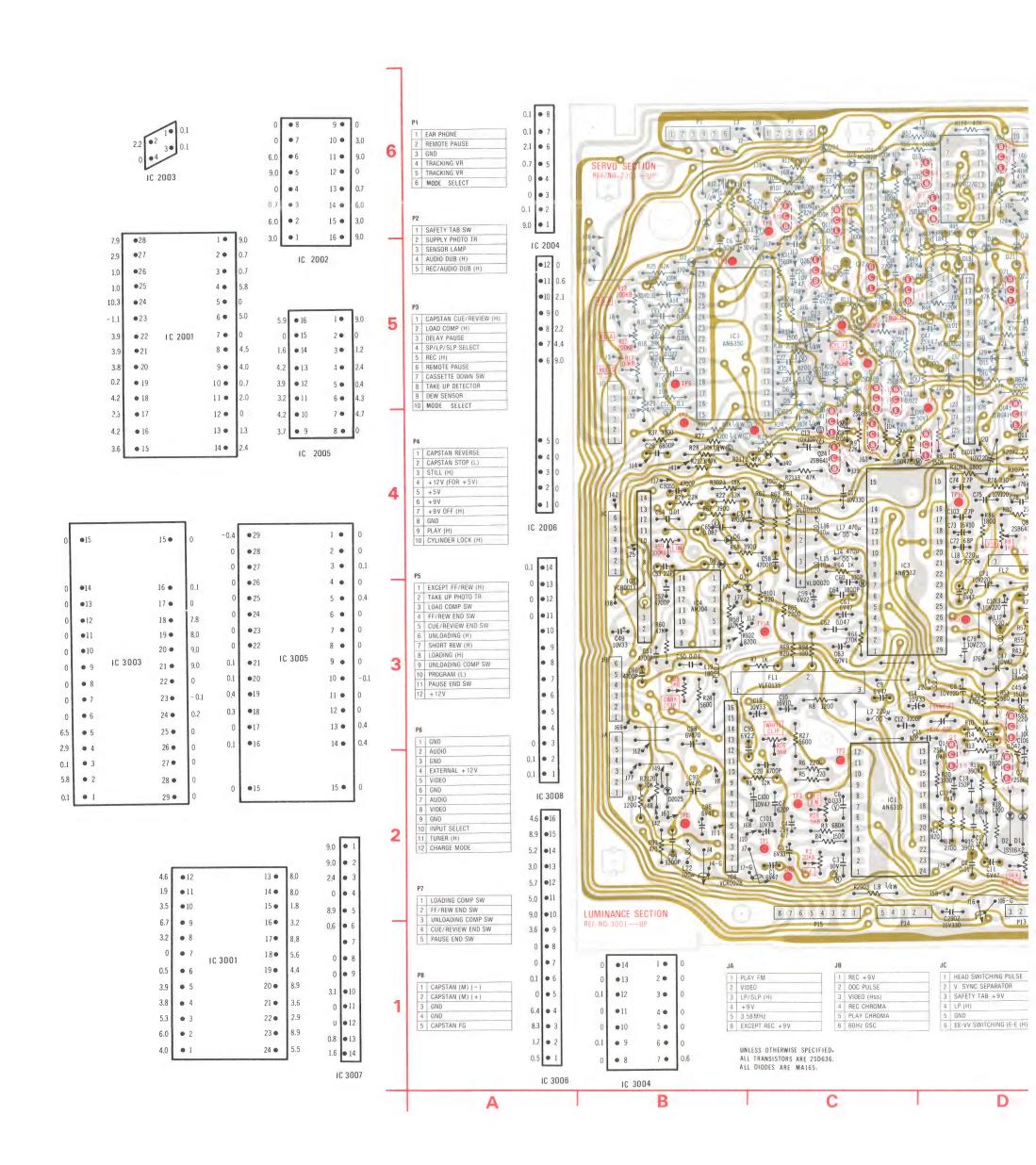
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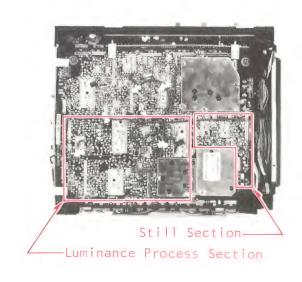


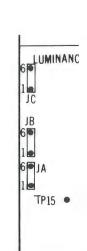
4-8 LUMINANCE & STILL C.B.A.

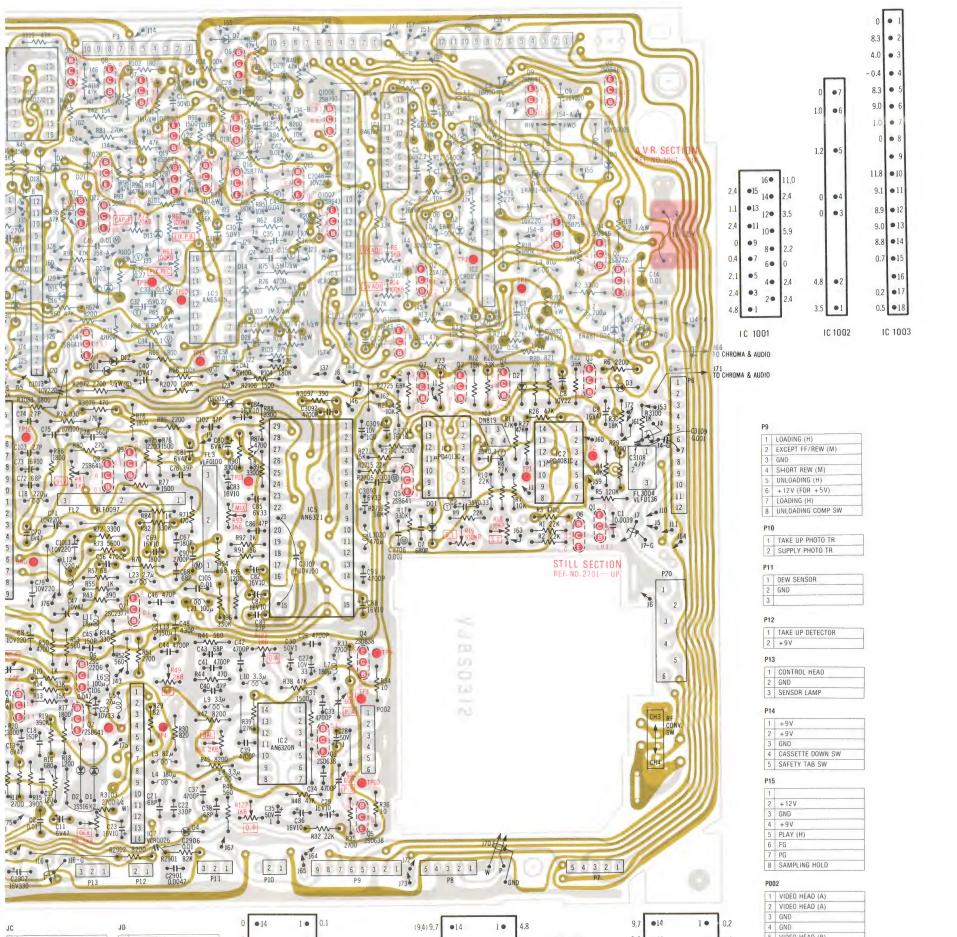
LUMINANCE PROCESS & STILL SECTION [MAIN C.B.A (VEPS0312A)]

LUMINANCE SECTION: REF. NO.: 3000 SERIES STILL SECTION: REF. NO.: 2700 SERIES









•14

•13

•11

•10

IC 2701

1 • 4.8

2 •

3 •

4 •

5 •

6 •

7 •

4.9

3.8

(9,4) 9.7

9.7 •12

(0.1) 0

9.7 • 9

F

9.7 •14

•12 3.8

•10

• 9

• 8

IC 2702

0.2 •13

0.1 •11

(1.0) 0

(9.0) 0

G

4.8 9.0

4.0 0 IC 2703

5 VIDEO HEAD (B) 6 VIDEO HEAD (B)

4 AUDIO 5 CH SELECT (CH4) 6 CH SELECT (CH3)

H

P20

1 GND 2 VIDEO 3 +9V

8.4

0.2

0.5

0 (0.4)

2 •

3 •

4 •

5 •

6 •

0 • 14

•13

•12

•10

• 9

E

IC 3002

0.4

0.1 •11 2 •

3 •

4 •

5 •

6 •

7 • 0.6

1 HEAD SWITCHING PULSE
2 V. SYNC SEPARATOR

3 SAFETY TAB + 9V
4 LP (H)
5 GND
6 EE-VV SWITCHING (E-E (H))

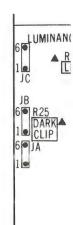
D

1 EAR PHONE

AUDIO DUB (H)

4 AUDIO MUTING (H)
5 SLP (H)

REC & AUDIO DUB (H)



uminance S	ection C
IC3001	C-2
IC3002	E-2
IC3003	C-4
IC3004	B-3
IC3005	E-4
IC3006	B-2
IC3007	D-2
IC3008	B-3
Q3001	D-2
Q3002	D-2
Q3003	E-2
Q3004	F-3
Q3005	F-2
Q3006	D-3
Q3007	D-3
Q3008	D-4
Q3009	D-4

Slow & Still	Section (
Q2701	G-3
Q2702	F-4
Q2703	G-4
Q2704	F-4
Q2705	F-4
Q2706	G-3
Q2707	F-4



Still Section-

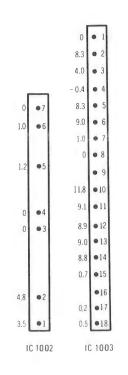


UP	PH0	TO	TR	
V	PHOT	Ω T	R	

JP DETECTOR



e Process Section



REW (M)	
DING (H)	
(FOR +5V)	
VG (H)	
DING COMP SW	

UP PHOTO TR	
Y PHOTO TR	
ENSOR	

EN	SOR			

		-	_			_
_	-	-			_	-
0L	HEA	D		-		_

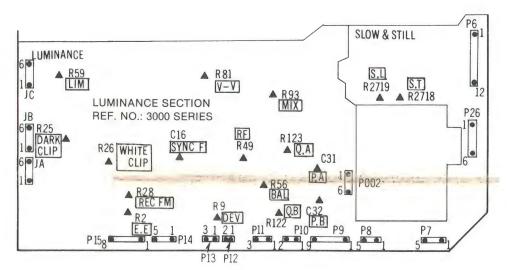
TE D	OWN	SW	1	

	- 1
	 _
j.	 -

HEAD	(A)	
HEAD	(A)	
HEAD	(B)	
HEAD	(B)	

		 -
ECT	(CH4)	
ECT	(CH3)	

					SLOW &	STILL P6
6 UMINANCE		•	TP16	TP13		TP2702 •TP2701
JB 6	• TP14	LUMINA	GND NCE SE			P26
1 de	TP 3.	•TP2	TP7	•TP4	TP 9 1 P 8 P002	6
TP	GND 158	5 1 P14	3121	P11 P10		P7 5 1



JD (Main C.B.A)						
PIN NO.	SIGNAL NAME		DESTINATION			
1	Earphone	JD-1	Chrominance & Audio C.B.A			
2	Audio DUB (H)	JD-2	Chrominance & Audio C.B.A			
3	REC & Audio DUB (H)	JD-3	Chrominance & Audio C.B.			
4	Audio Muting (H)	JD-4	Chrominance & Audio C.B.			
5	SLP (H)	JD-5	Chrominance & Audio C.B.A			
6	Audio	JD-6	Chrominance & Audio C.B.			

P1 (Main C.B.A)						
PIN NO.	SIGNAL NAME	DESTINATION				
1	Earphone	Remote Control, Earphone Jacks C.B.A				
2	Remote Pause	Remote Control, Earphone Jacks C.B.A				
3	GND	Remote Control, Earphone Jacks C.B.A				
4	Traking VR	Tracking VR P.C.B				
5	Traking VR	Tracking VR P.C.B				
6	Mode Select	Remote Control, Earphone Jacks C.B./				

	P2 (M	Aain C.B.A)		
PIN NO.	SIGNAL NAME		DESTINATION	
1	Safety Tab Switch	JF-1	System Control II C.B.A	
2	Supply Photo TR	JF-2	System Control II C.B.A	
3	Sensor Lamp	JF-3	System Control II C.B.A	
4	Audio Dubing (H)	JF-4	System Control II C.B.A	
5	REC/Audio DUB (H)	JF-5	System Control II C.B.A	

P3 (Main C.B.A)							
PIN NO.	SIGNAL NAME	DESTINATION					
1	Capstan CUE/REV (H)	JG-1	System Control II C.B.A				
2	Loading Comp (H)	JG-2	System Control II C.B.A				
3	Delay Pause	JG-3	System Control II C.B.A				
4	SP/LP/SLP Switching	JG-4	System Control II C.B.A				
5	REC (H)	JG-5	System Control II C.B.A				
6	Remote Pause	JG-6	System Control II C.B.A				
7	Cassette Down SW	JG-7	System Control II C.B.A				
8	Take Up Detector	JG-8	System Control II C.B.A				
9	DEW Sensor	JG-9	System Control II C.B.A				
10	Mode Select	JG-10	System Control II C.B.A				

P4 (Main C.B.A)							
PIN NO.	SIGNAL NAME	DESTINATION					
1	Capstan Reverse	JH-1	System Control II C.B.A				
2	Capstan Stop (L)	JH-2	System Control II C.B.A				
3	Still (H)	JH-3	System Control II C.B.A				
4	+ 12V	JH-4	System Control II C.B.A				
5	+ 5 V	JH-5	System Control II C.B.A				
6	+9V	JH-6	System Control II C.B.A				
7	+9V Off (H)	JH-7	System Control II C.B.A				
8	GND	JH-8	System Control II C.B.A				
9	Play (H)	JH-9	System Control II C.B.A				
10	Cylinder Lock (H)	JH-10	System Control II C.B.A				

			1
			2
			3
	Slow & Still 5	Section C.B.A.	4
		1	5
	Q2701	G-3	6
	Q2702	F-4	7
	Q2703	G-4	8
	Q2704	F-4	9
	Q2705	F-4	10
	Q2706	G-3	11
	Q2707	F-4	12
-			

Luminance Section C.B.A.

C-2 E-2

C-4 B-3 E-4 B-2 D-2 B-3

D-2 D-2 E-2 F-3 F-2 D-3 D-3

D-4

IC3001 IC3002

IC3004 IC3005 IC3006 IC3007

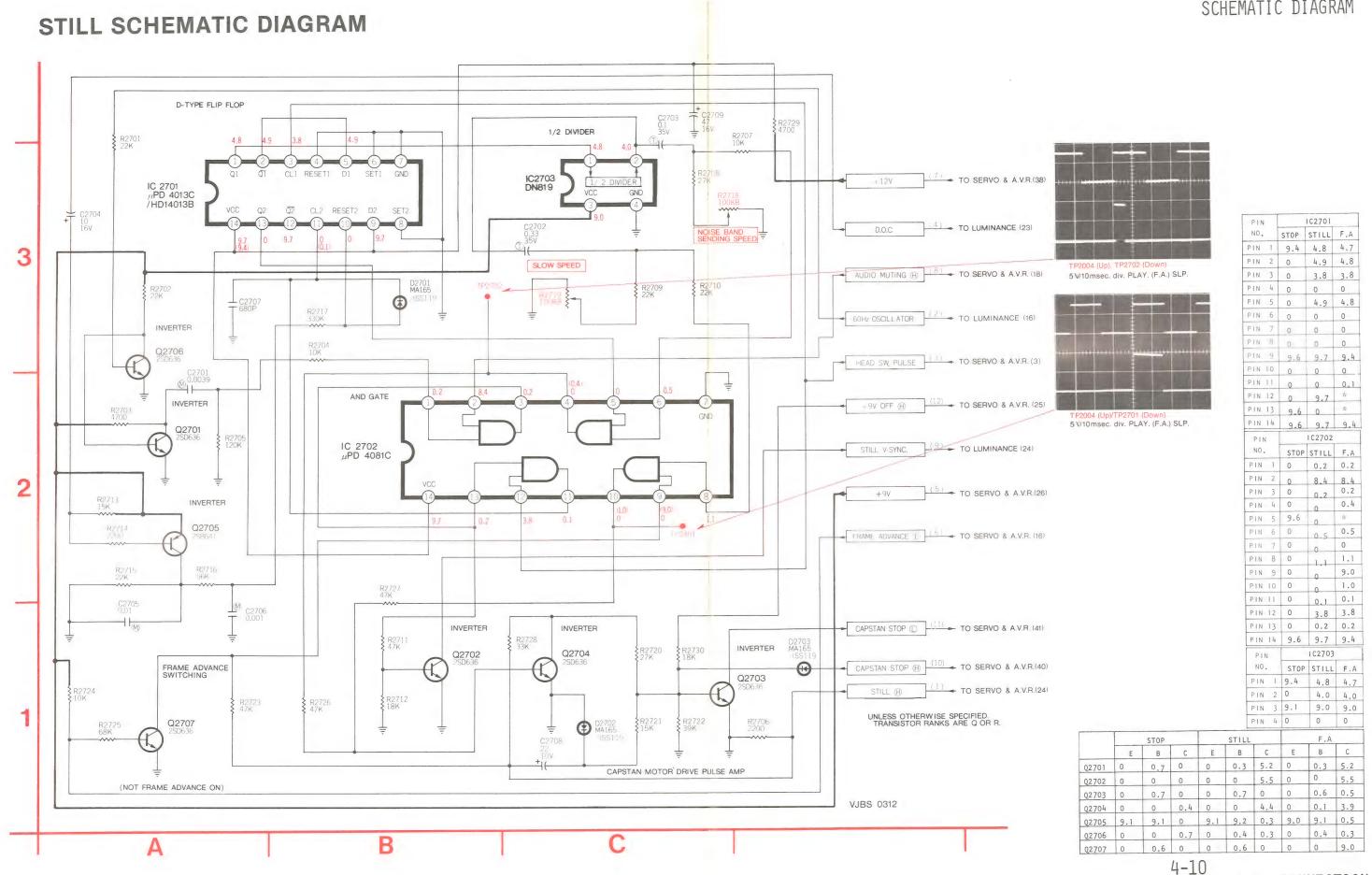
IC3008 Q3001

Q3001 Q3002 Q3003 Q3004 Q3005 Q3006 Q3007

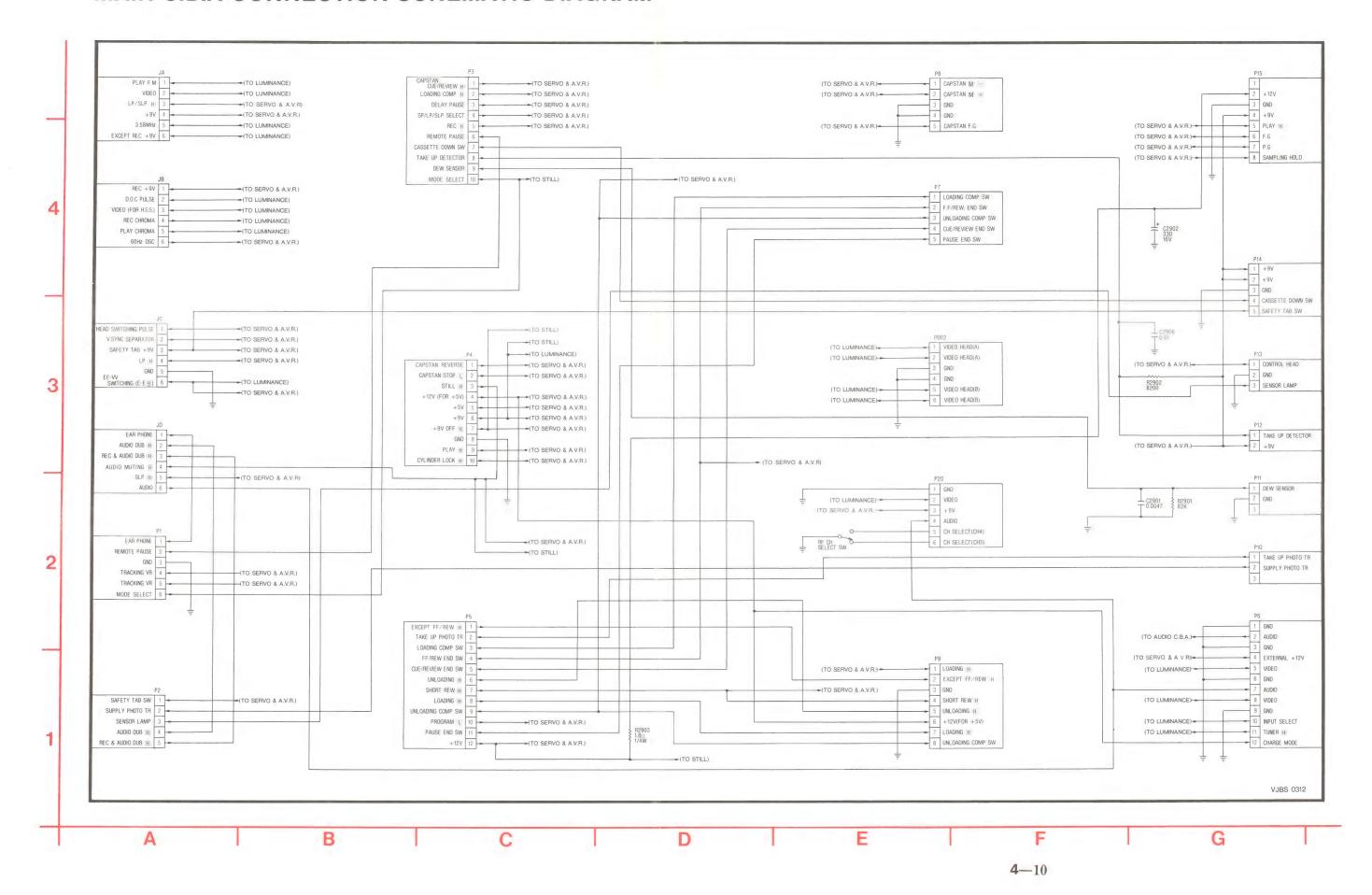
Q3008 Q3009

P5 (Main C.B.A)							
PIN NO.	SIGNAL NAME	DESTINATION					
1	Except FF/REW (H)	JI-1	System Control II C.B.A				
2	Take Up Photo TR	JI-2	System Control II C.B.A				
3	Loading Comp Switch	JI-3	System Control II C.B.A				
4	FF/REW End Switch	JI-4	System Control II C.B.A				
4 5	CUE/Review End SW	JI-5	System Control II C.B.A				
6	Unloading (H)	JI-6	System Control II C.B.A				
7	Short REW	JI-7	System Control II C.B.A				
8	Loading (H)	JI-8	System Control II C.B.A				
9	Unloading Comp SW	JI-9	System Control II C.B.A				
10	Program (L)	JI-10	System Control II C.B.A				
11	Pause End SW	JI-11	System Control II C.B.A				
12	+ 12 V	JI-12	System Control II C.B.A				

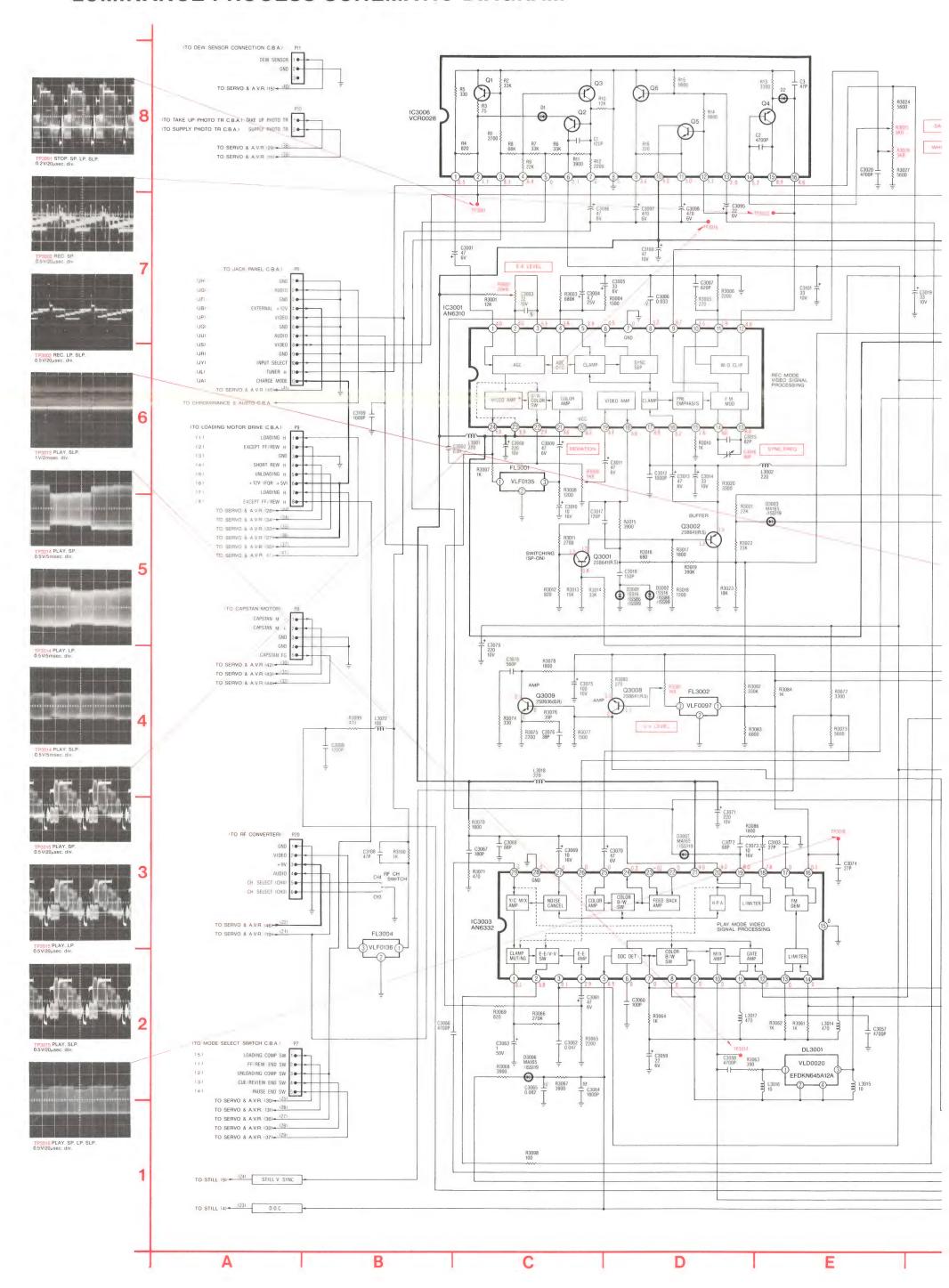
	E	REC	С	E	P.B	C
03001	1.3	0.6	1.3	1.3	0.6	1
Q3002 Q3003	0	1.3	0 .	0.7	1.3	0
Q3004	0	0.1	0	0	0.7	0
03005	0	0.7	0	0	0.3	0
03006	0	0	0.1	2.4	3:1	6
Q3007 Q3008	0.1	0.1	0.1	8.5	7.8	4 1
Q3009	0	0	0.1	1.2	1.8	7
PIN		3001	PIN	-	C3005	
NO.	REC 4.0	P.B	NO.	REC	P.B	+
PIN 2	6.0	6.0		2 0	7.1	+
PIN 3	5.3	5:3	PIN	3 0.1		
PIN 4	3.8	3.8	-	4 0	2.8	-
PIN 5	0.5	0.5		5 0.4	4.3	-
PIN 7	0	0		7 0	3.6	
PIN 8	3.2	3.1		B 0	3.6	
PIN 9 PIN 10	6.7	0.1	PIN S	9 0	3.6	-
PIN 11	1.9	0.3	PIN 1	-0.		
PIN 12	4.6	0	PIN 12		3.6	
PIN 13	8.0	0.6	PIN 1	U. T	1	
PIN 14 PIN 15	1.8	0.6	PIN 14	U. 4		-
PIN 16	3.2	1.2	PIN 16	-		
PIN 17	8.8	0.7	PIN 17		3.8	
PIN 18	5.6	5.6	PIN 18	10.3	2 0	
PIN 19	8.9	8.9	PIN 20		8.1	
PIN 21	3.6	3.6	PIN 21	0.1	8.7	
PIN 22	2.9	2.9	PIN 22		2.1	-
PIN 23	5.5	5.5	PIN 23		6.8	+
PIN	T	002	PIN 25		2.8	
NO.	REC	P.B	PIN 26		6.0	4
PIN 1	0.1	8.8	PIN 27		3.1	+
PIN 2 PIN 3	0	0.7	PIN 28		0 3.1	1
PIN 4	0	0	PIN	T	C3006	Ī
PIN 5	0	0.6	NO.	REC		4
PIN 6 PIN 7	0	0.7	PIN 1	- 0.)	2 1	+
PIN 8	0.6	3.2	PIN 3			
PIN 9	0	6.0	PIN L	0.4		-
PIN 10	0	4.2	PIN S		8.9	+
PIN 12	0.1	0.9	PIN 7	0.1	0	
PIN 13	0	6.0	PIN 8	-0-	0	
PIN 14	0	3.2	PIN 9	7,0	9.0	+
PIN NO.	REC	P.B	PIN 11	100	4.7	
PIN 1	0.1	4.9	PIN 12	-	5.3	
PIN 2	5.8	5.4	PIN 13 PIN 14	-	0.4	+
PIN 3 PIN 4	2.9	8.9	PIN 15	-	0.7	
PIN 5	6.5	6.5	PIN 16	4.6	0	
PIN 6	0	6.6	PIN NO.		C3007	-
PIN 7 PIN 8	0	3.6	PIN 1	9.0		-
PIN 9	0	3.6	PIN 2	-	1	
PIN 10	0	3.9	PIN 3			
PIN 11	0	3.6	PIN 4	+	8.9	-
PIN 12 PIN 13	0	3.6	PIN 6	+	1	
PIN 14	0	3.6	PIN 7			
PIN 15	0	0	PIN 8	-	0	-
PIN 16	0.1	3.9	PIN 10	+ -	3.1	
PIN 17	7.8	5.5	PIN 11	0	0	
PIN 19	8.0	2.9	PIN 12 PIN 13	1	0	
PIN 20 PIN 21	9.0	7.9 8.9	PIN 13 PIN 14	0.0		+
PIN 22	0	2.1	PIN		3008	1
PIN 23	-0.1	-0.3	NO.	REC	P.B	
PIN 24	0.2	7.2	PIN 1	+	-	-
PIN 25 PIN 26	0	5.7	PIN 3	-	0	1
PIN 27	0	3.2	PIN 4	+		
PIN 28	0	0	PIN 5	_		-
PIN 29 PIN	0 1030	3.1	PIN 6	+	1	+
NO.	REC	P.B	PIN 8			
PIN 1	0	3.2	PIN 9			-
PIN 2 PIN 3	0	1.7	PIN 10	0	3.9	1
PIN 3	0	3.2	PIN 12	0	0	1
PIN 5	0	0	PIN 13	0	2.7	-
PIN 6 PIN 7	0	0	PIN 14	0.1	3.1	1
PIN 7	0.6	2.7				
PIN 9	0.1	6.3				
PIN 10 PIN 11	0	4.5				
PIN 12	0.1	3.2 8.8				
PIN 13	0	5.5				
PIN 14	0	3.2				

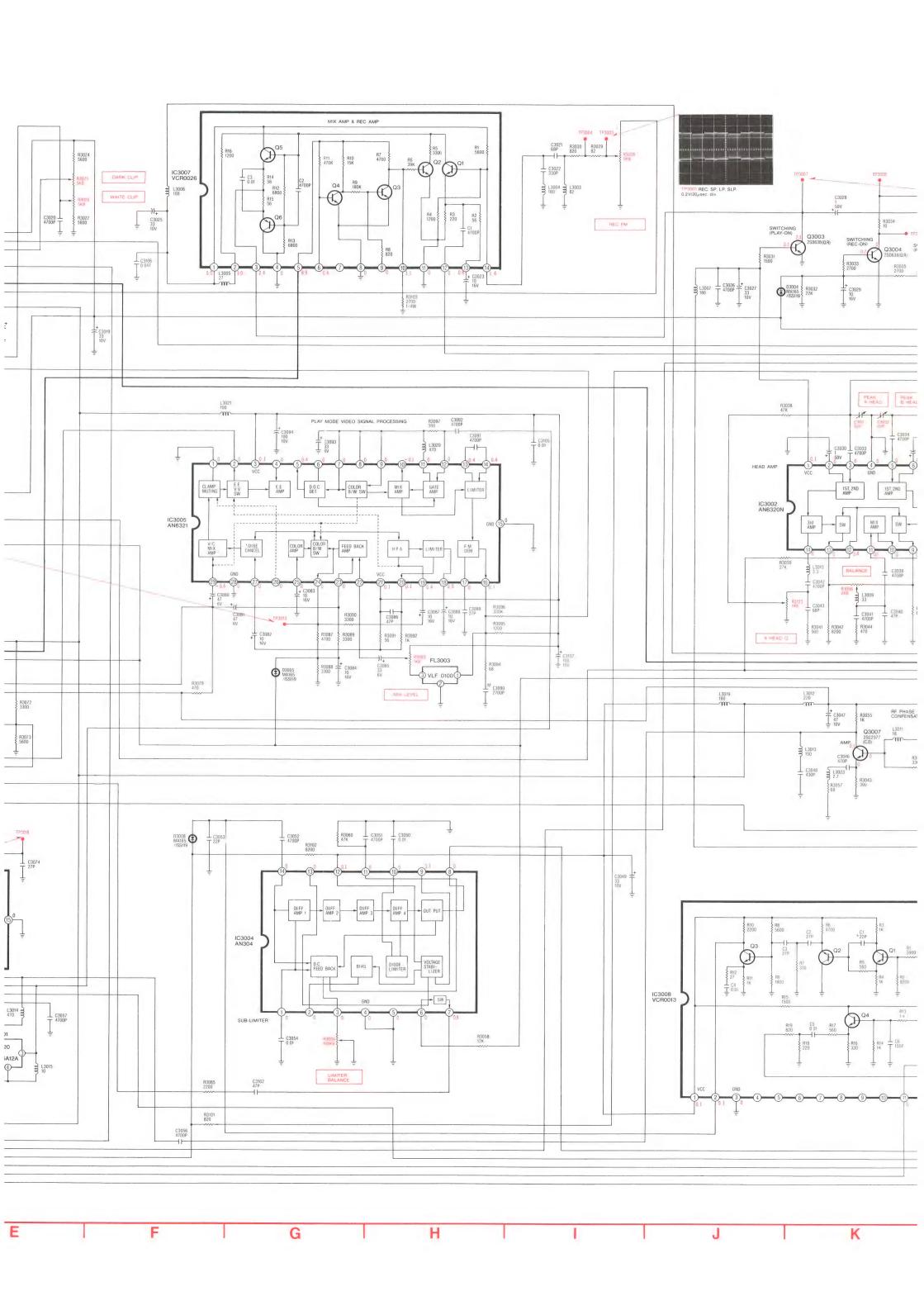


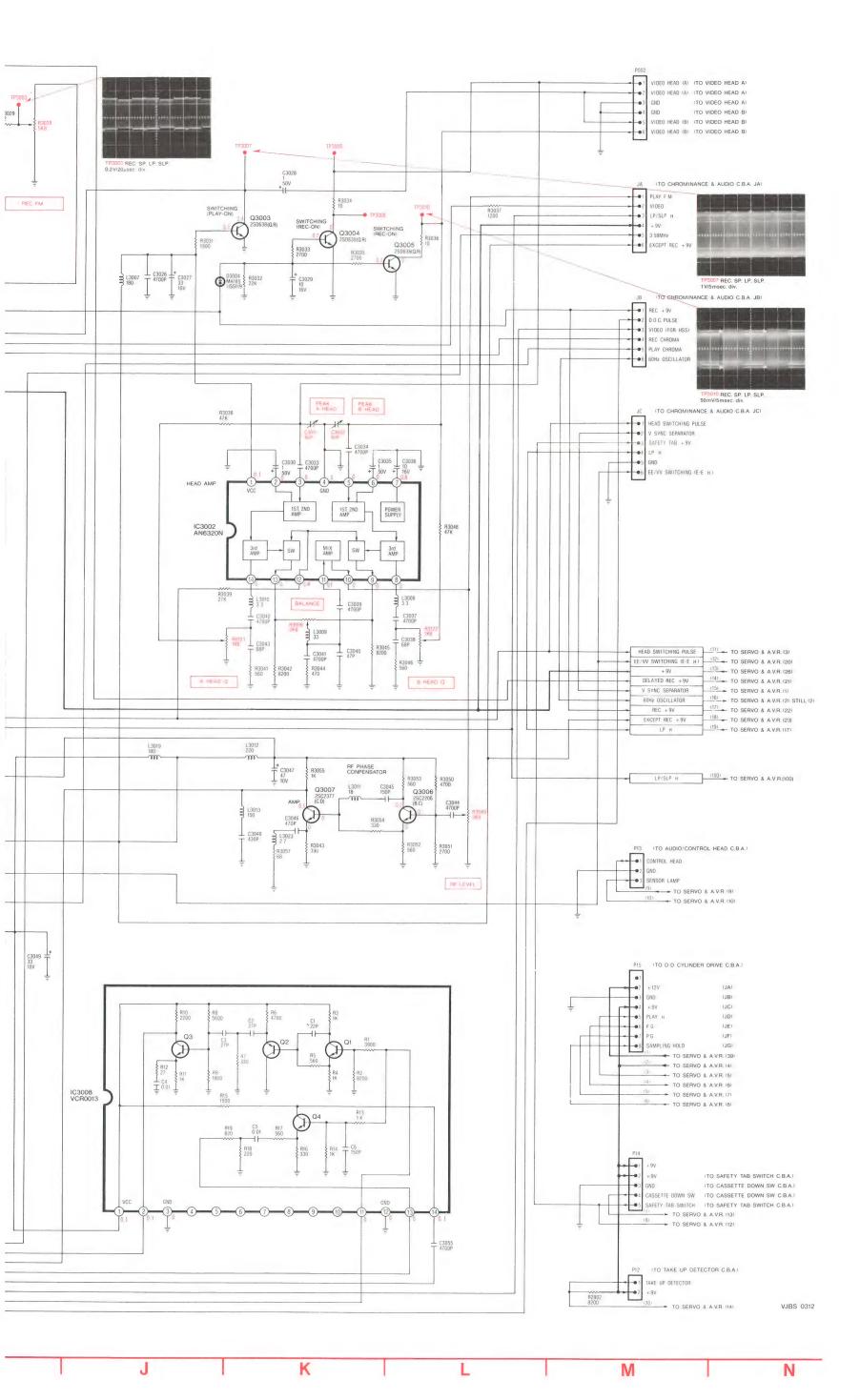
MAIN C.B.A CONNECTION SCHEMATIC DIAGRAM



LUMINANCE PROCESS SCHEMATIC DIAGRAM

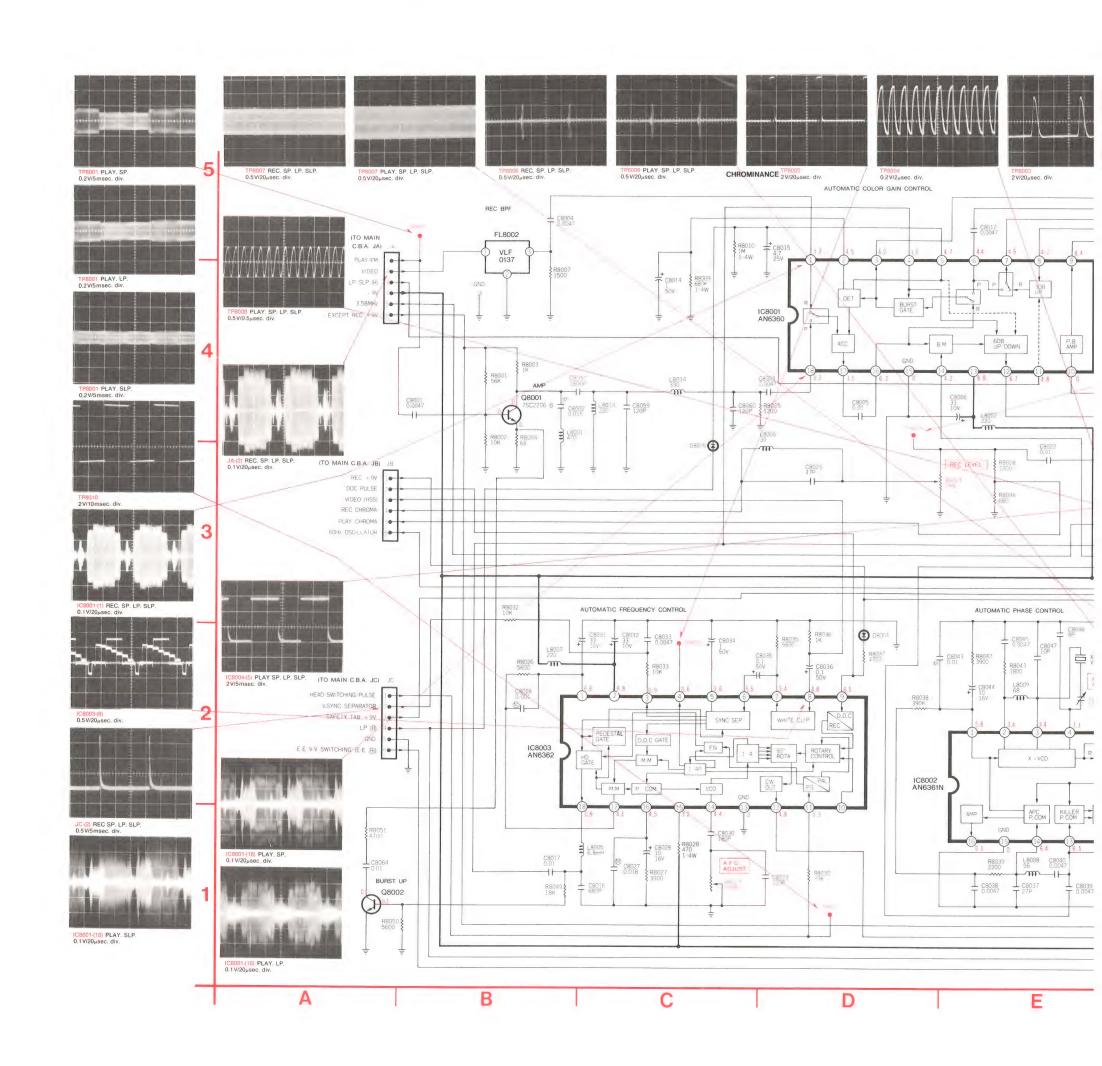






4-12 CHROMINANCE PROCESS SCHEMATIC DIAGRAM

CHROMINANCE PROCESS & AUDIO SCHEMATIC DIAGRAM

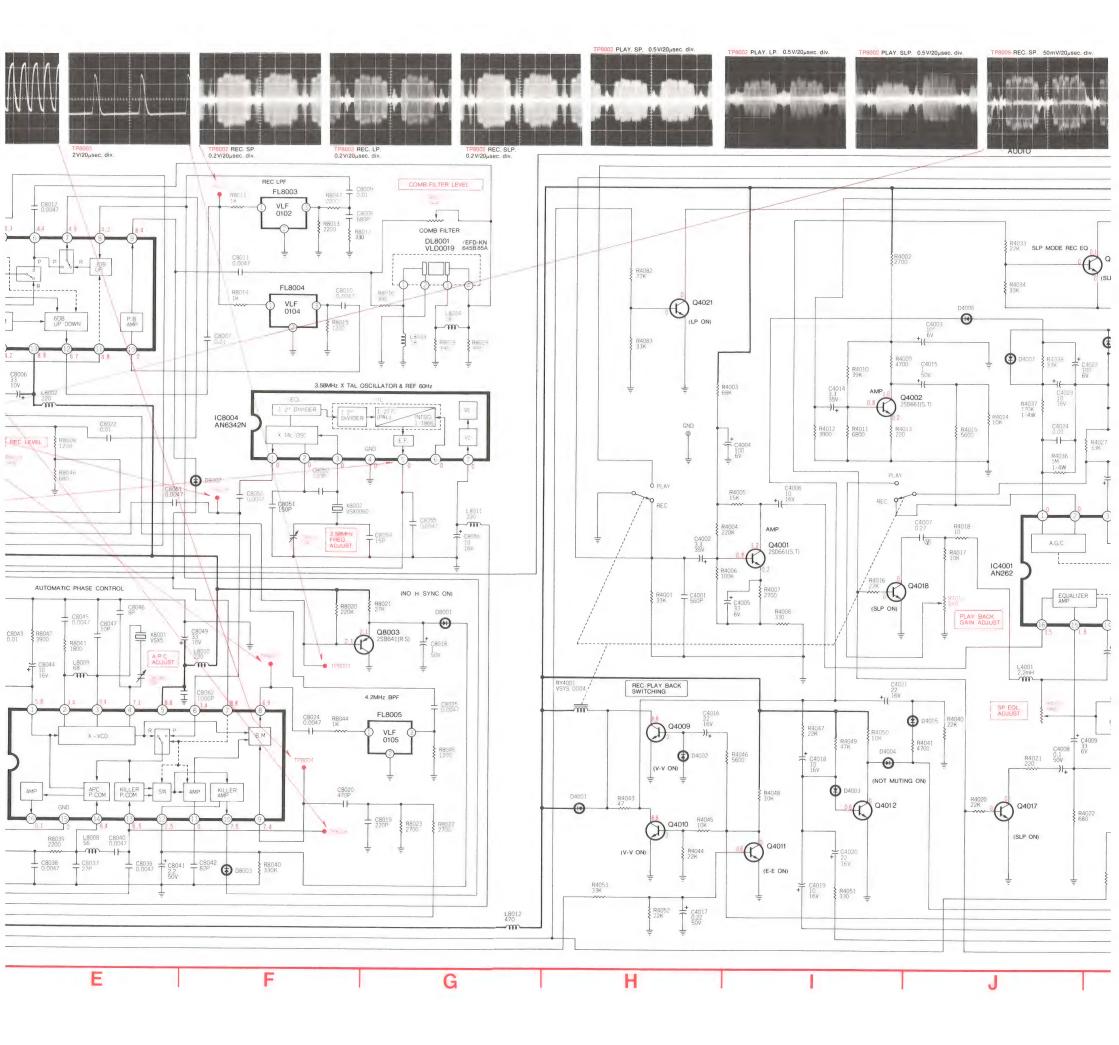


В		PIN	108	3001	PIN	108	002	PIN	108	003	PIN		1080	004
В	С	NO.	REC	P.B	NO.	REC	P.B	NO.	REC	P.B	NO.		REC	P.B
.0	5.5	PIN 1	3.3	3.3	PIN 1	5.8	5.8	PIN 1	6.6	6.6	PIN	1	0	3.6
.7	0	PIN 2	4.5	4.5	PIN 2	3.4	3.4	PIN 2	8.8	8.8	PIN	2	0	2.8
		PIN 3	4.0	3.9	PIN 3	3.4	3.4	PIN 3	0.9	0.6	PIN	3	0	3.4
		PIN 4	1.6	1.7	PIN 4	7.1	7.1	PIN 4	0.6	0.6	PIN	4	0	0
		PIN 5	4.7	4.9	PIN 5	8.8	8.8	PIN 5	3.6	3.6	PIN	5	0	3.1
		PIN 6	0	4.2	PIN 6	3.4	3.4	PIN 6	5.5	5.5	PIN	6	0	0
		PIN 7	4.9	5.0	PIN 7	8.8	0.7	PIN 7	5.4	5.3	PIN	7	0	8.
		PIN 8	4.2	4.4	PIN 8	6,9	7.0	PIN 8	4.8	4.8				
		PIN 9	8.4	3.2	PIN 9	7.4	7.4	PIN 9	6.5	6.5				
		PIN 10	0	1.7	PIN 10	7.5	7.5	PIN 10						
		PIN 11	0	0	PIN 11	0	0	PIN 11	1.3	1.3				
		PIN 12	6.7	6.7	PIN 12	2.5	2.5	PIN 12	4.8	4.5				
		PIN 13	8.8	8.8	PIN 13	6.5	6.5	PIN 13	0	0				
		PIN 14	4.2	4 1	PIN 14	6.4	6.4	PIN 14	4.4	4.4				
		PIN 15	0	0	PIN 15	0	0	PIN 15	1.2	1.2				
		PIN 16	6.2	6.2	PIN 16	0.1	0	PIN 16	4.5	4.5				
		PIN 17	1.5	1.5				PIN 17	4.1	4.1				
		PIN 18	3.3	3.2				PIN 18	0.8	0.7				

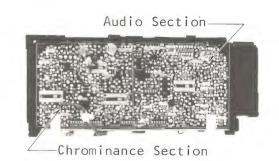
Q8001 O

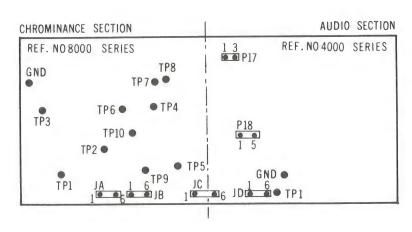
Q8003 1.5 1.6 O

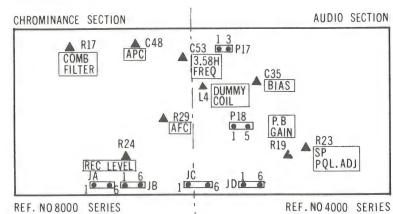
		REC			P.B			1040	001
	E	В	C	Е	В	С	NO.	REC	P.B
Q4001	0.2	0.8	1.2	0.2	0.8	1.2	PIN 1	0	0
Q4002	0.2	0.8	1.0	0.2	0.8	1.1	PIN 2	0	0
Q4003	0	0	0	0	0	0	PIN 3	0:7	0.7
Q4004	0	0.8	8.6	0	0	0.3	PIN 4	0	0
Q4005	0	0.8	8.6	0	0	0	PIN 5	6.8	6.6
Q4006	8.9	8.1	8.7	8.9	8.9	0	PIN 6	1.1	1.0
Q4007	0	0.6	0	0	0	8.9	PIN 7	1.1	0
Q4008	0	0	8.8	0	0	8.6	PIN 8	0.3	0.
Q4009	0	0	8.8	0	0.4	1.6	PIN 9	4.0	0
Q4010	0	0	8.8	0	0.7	0	PIN 10	4.5	4.3
Q4011	0	0.6	0	0	0	4.6	PIN 11	8.7	0
Q4012	0	0.6	0	0	0.6	0	PIN 12	8.8	8.6
Q4015	1.3	1.9	8.8	1.2	1.8	8.6	PIN 13	6.4	6.2
Q4016	0	0	0.1	0	0	0	PIN 14	3.2	3.1
Q4017	0	0	0	0	0	0	PIN 15	1.6	1.6
Q4018	0	0	0	0	0	0	PIN 16	1.5	1.5
Q4020	0	0	0	0	0	0			
Q4021	0	0	0	0	0	0	1		

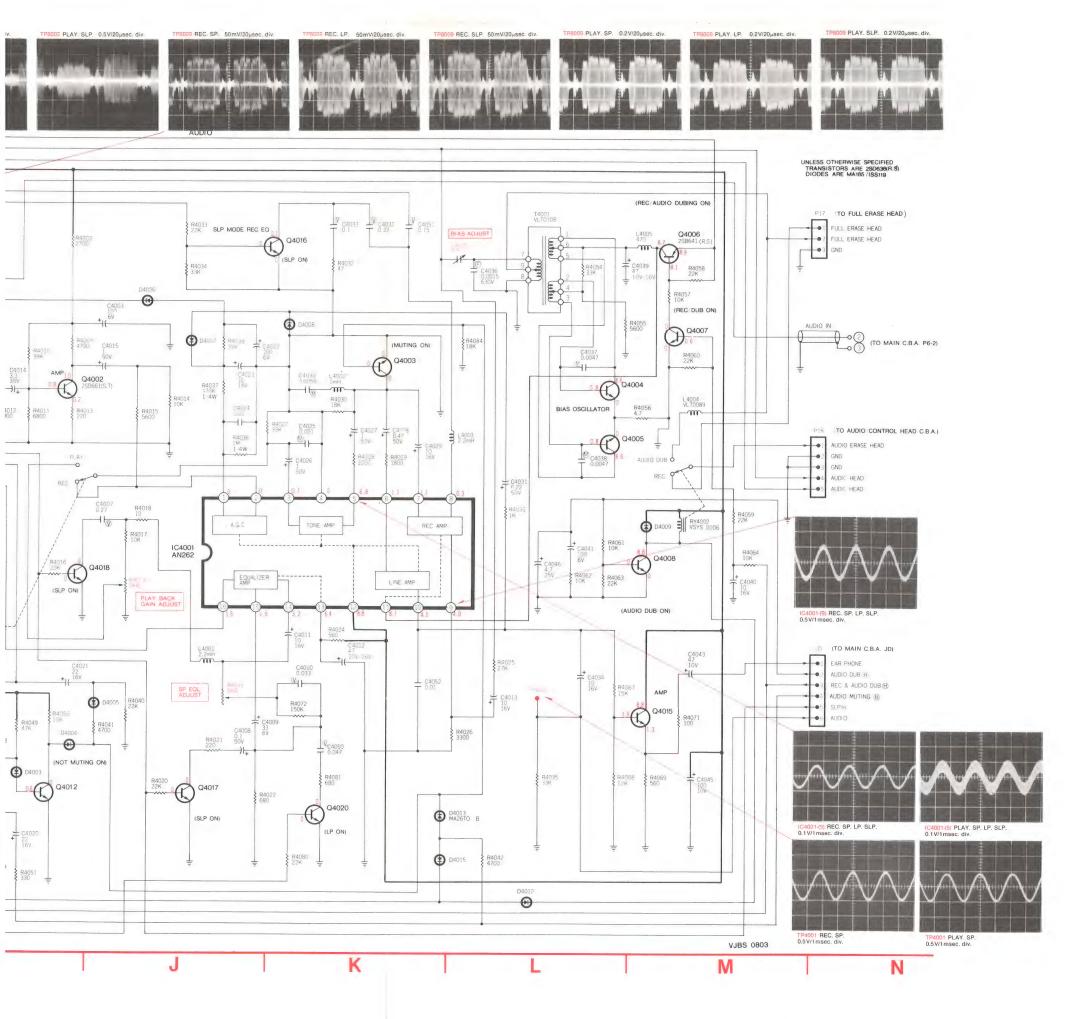


REC			P.B		PIN	1040	001
В	С	Ε	В	С	NO.	REC	P.B
0.8	1.2	0.2	0.8	1.2	PIN I	0	0
0.8	1.0	0.2	0.8	1.1	PIN 2	0	0
0	0	0	0	0	PIN 3	0:7	0.7
0.8	8.6	0	0	0.3	PIN 4	0	0
0.8	8.6	0	0	0	PIN 5	6.8	6.6
8.1	8.7	8.9	8.9	0	PIN 6	1.1	1.0
0.6	0	0	0	8.9	PIN 7	1.1	0
0	8.8	0	0	8.6	PIN 8	0.3	0.
0	8.8	0	0.4	1.6	PIN 9	4.0	0
0	8.8	0	0.7	0	PIN 10	4.5	4.3
0.6	0	0	0	4.6	PIN 11	8.7	0
0.6	0	0	0.6	0	PIN 12	8.8	8.6
1.9	8.8	1 2	1.8	8.6	PIN 13	6.4	6.2
0	0.1	0	0	0	PIN 14	3.2	3.1
0	0	0	0	0	PIN 15	1.6	1.6
0	0	0	0	0	PIN 16	1.5	1.5
0	0	0	0	0			
0	0	0	0	0			



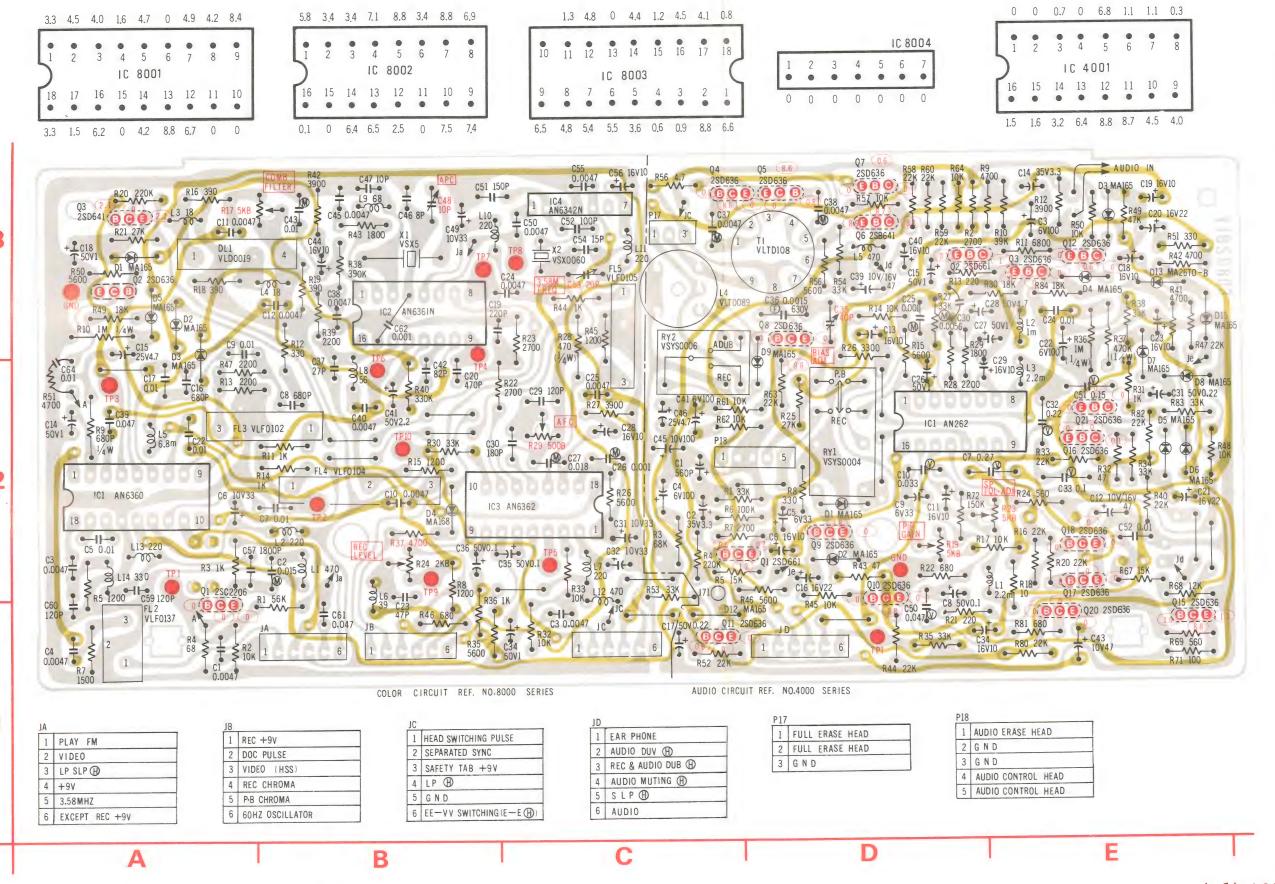




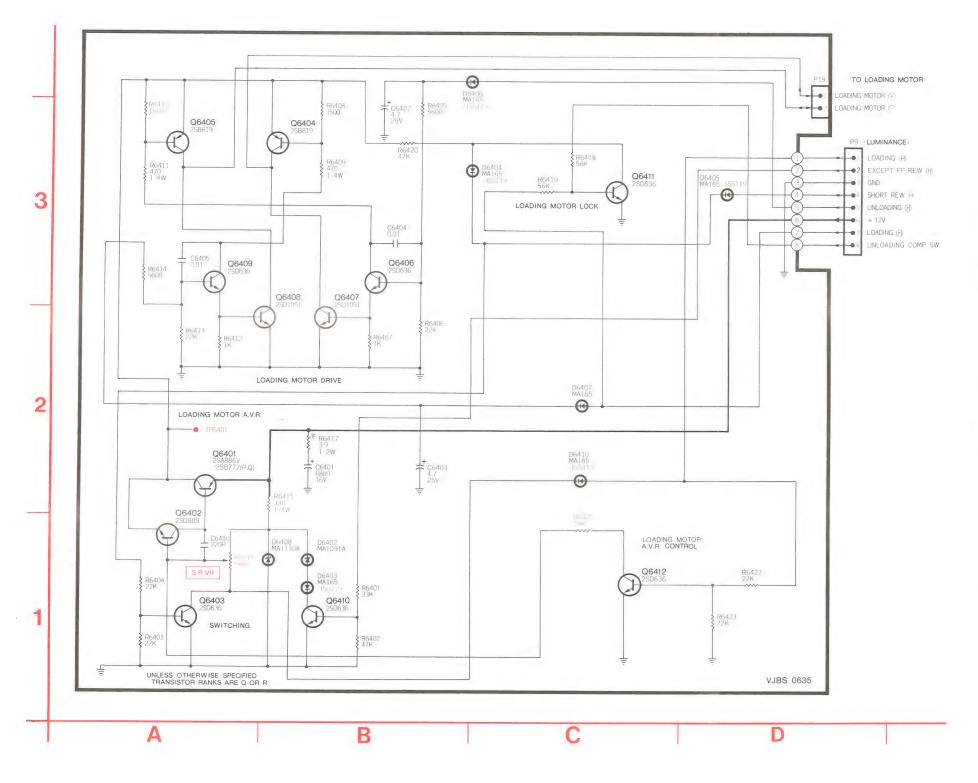


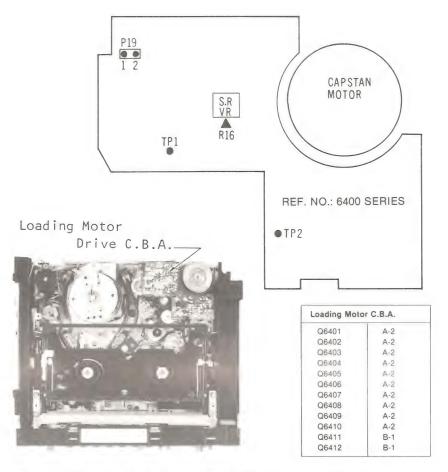
CHROMINANCE PROCESS & AUDIO C.B.A (VEPS0803A)

AUDIO SECTION: REF. NO.: 4000 SERIES CHROMINANCE SECTION: REF. NO.: 8000 SERIES

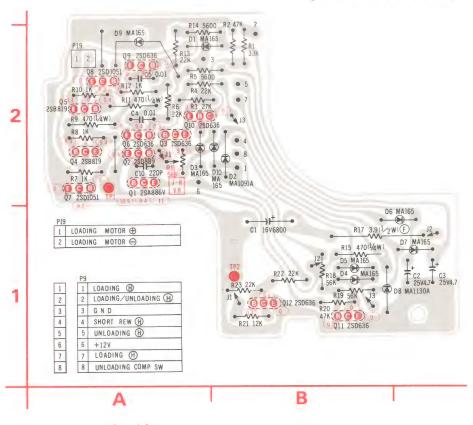


LOADING MOTOR DRIVE SCHEMATIC DIAGRAM



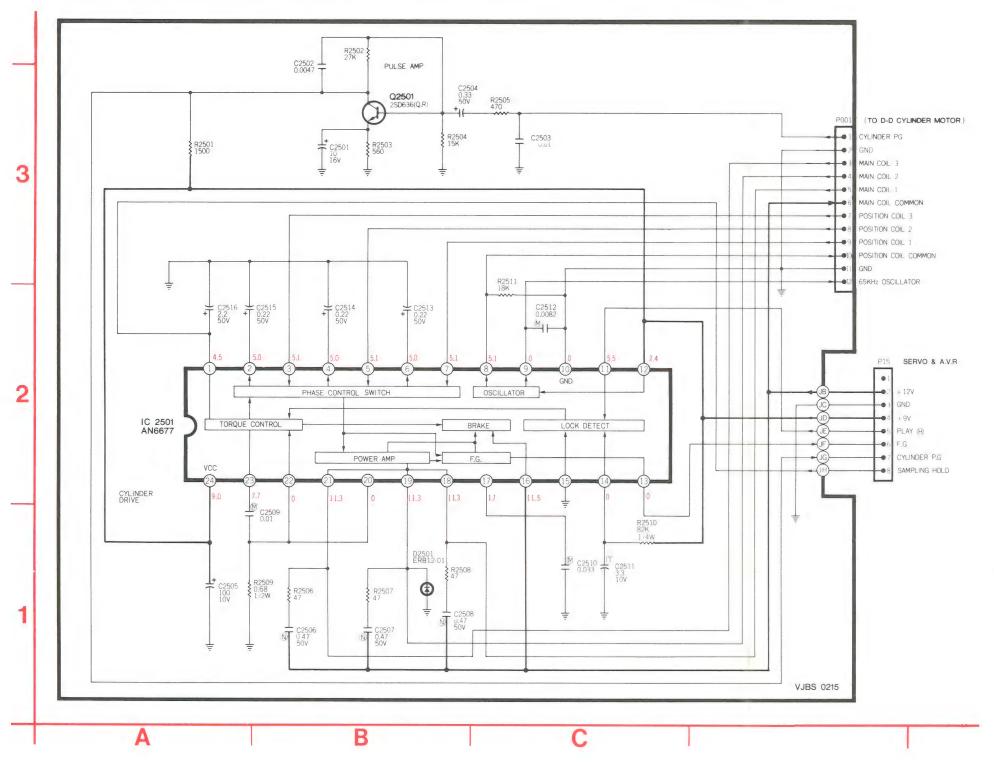


LOADING MOTOR DRIVE C.B.A REF. NO.: 6400 SERIES (VEPS0635A)

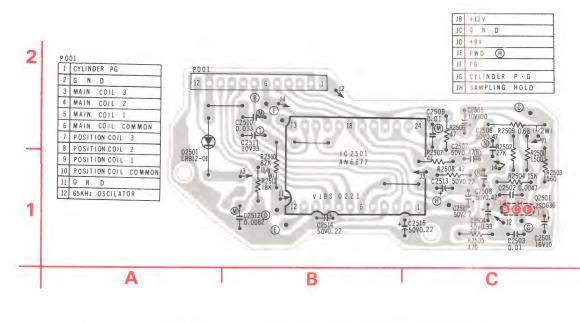


4-14

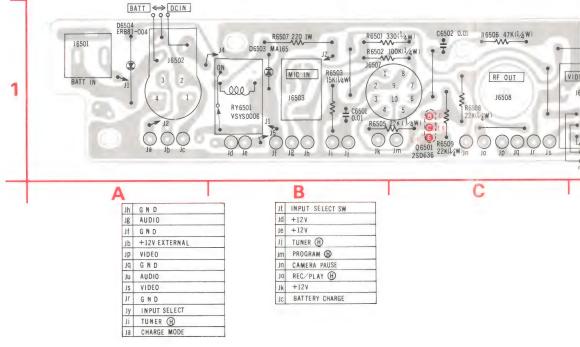
D.D CYLINDER DRIVE SCHEMATIC DIAGRAM



D.D CYLINDER DRIVE C.B.A (VEPS0221A)



JACK PANNEL C.B.A (VEPS00141A)



C.B.A (VEPS0221A)

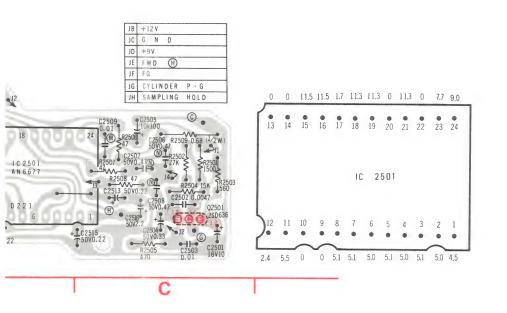
IMPORTANT SAFETY NOTICE

Components identified by shade A have special characteristics important for safety.

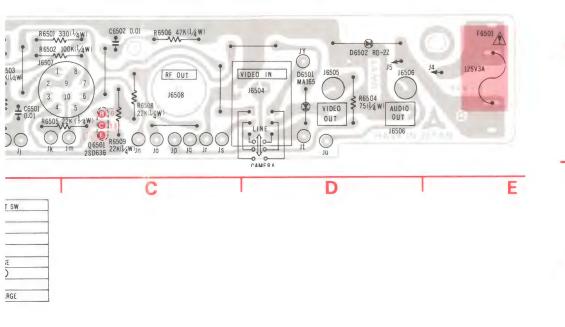
When replacing any of these components, use only the original ones.

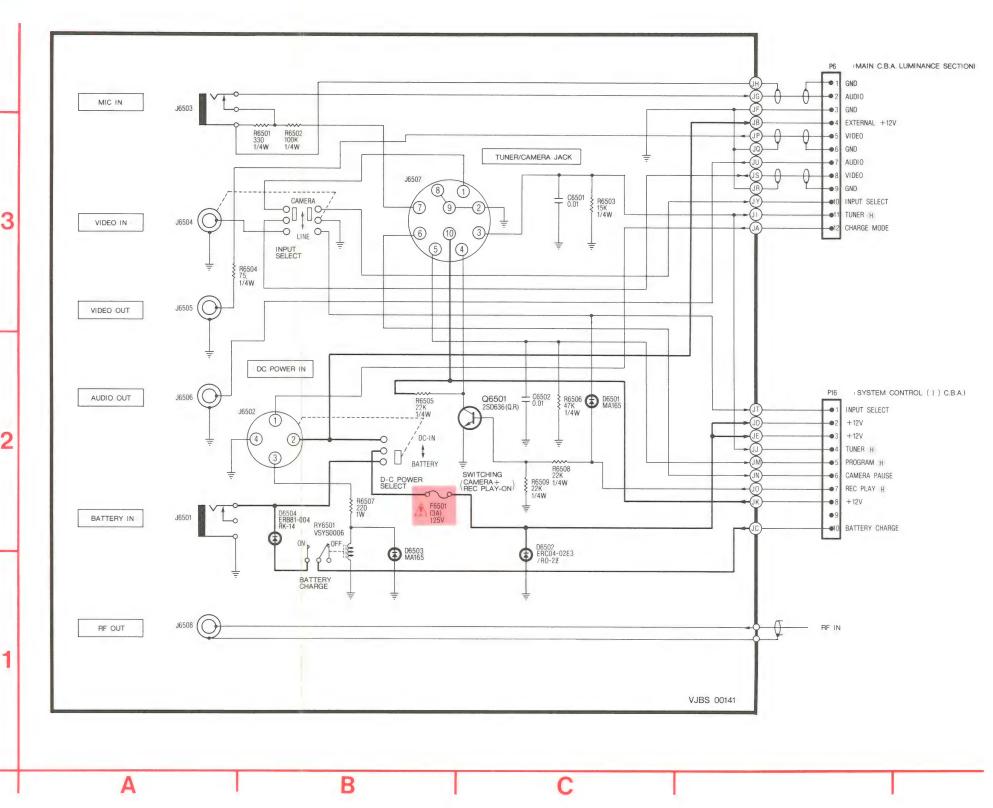
JACK PANNEL SCHEMATIC DIAGRAM

4-15
D.D. CYL DRIVE
SCHEMATIC & C.B.A.
JACK PANEL
SCHEMATIC & C.B.A.



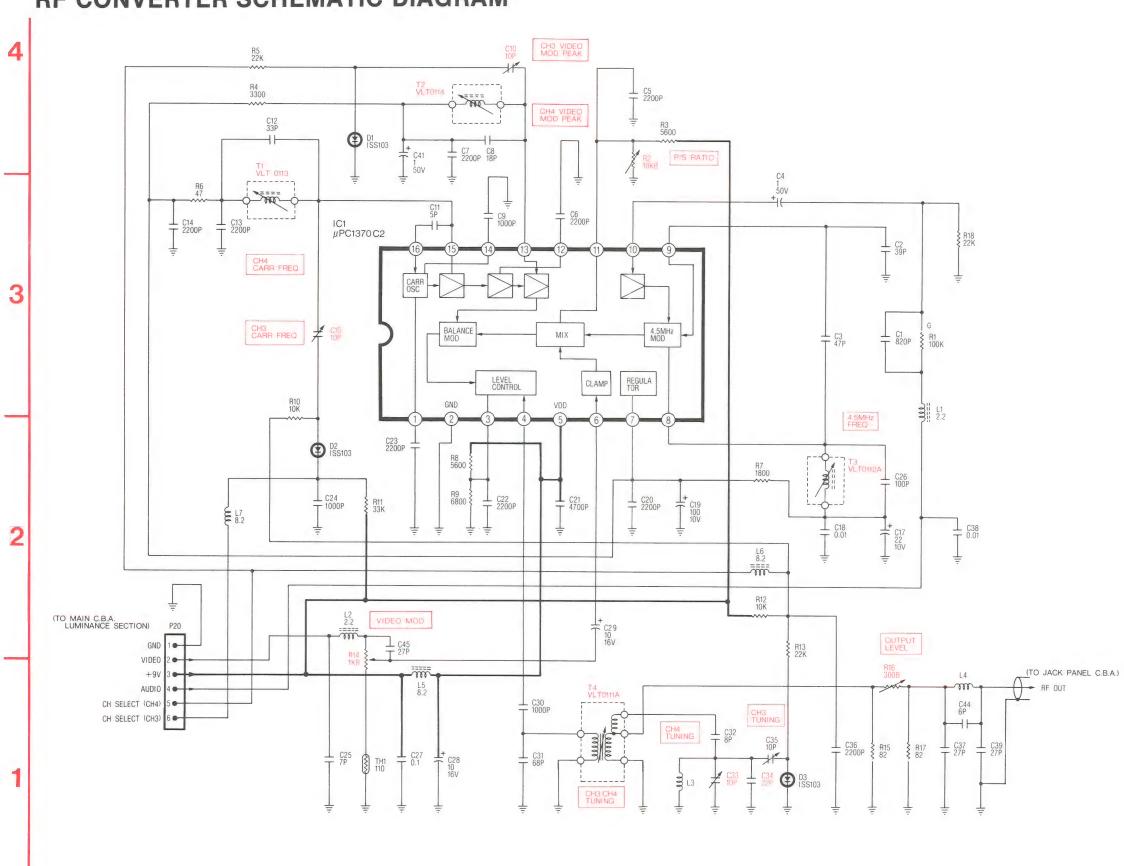
VEPS00141A)





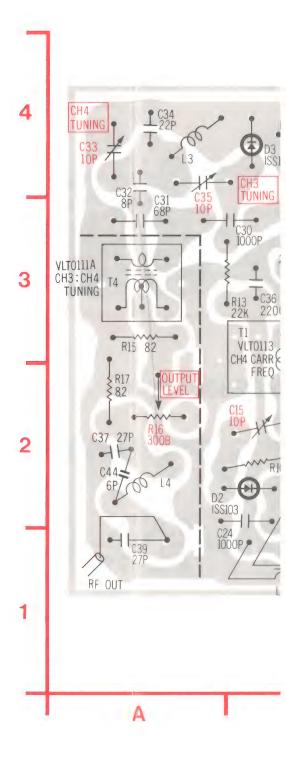
4-16 RF CONVERTER SCHEMATIC & C.B.A.

RF CONVERTER SCHEMATIC DIAGRAM

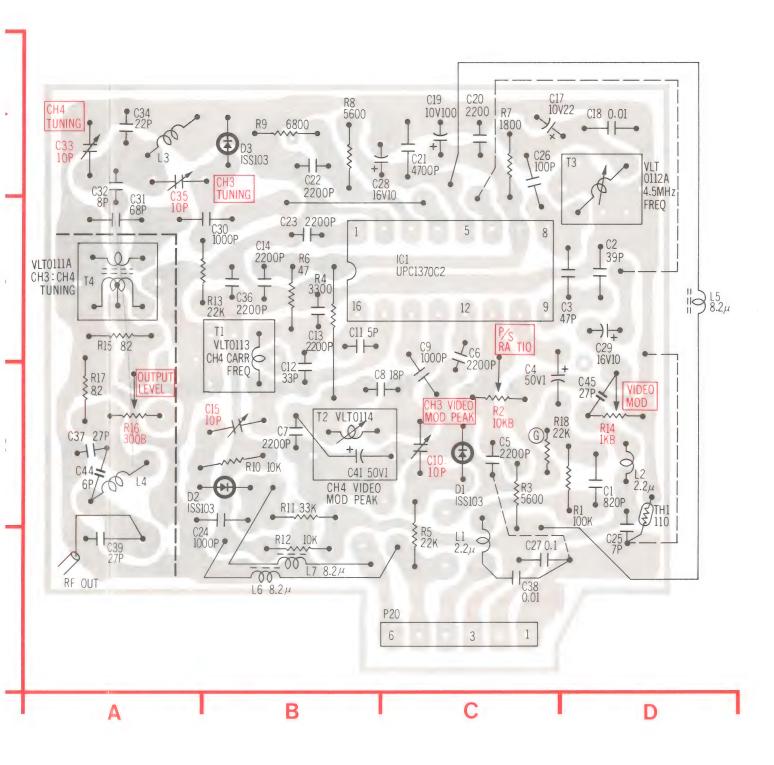


B

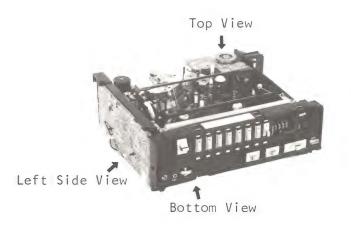
RF CONVERTER U

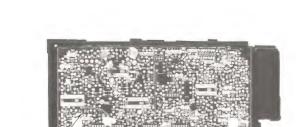


RF CONVERTER UNIT (ENC16259)



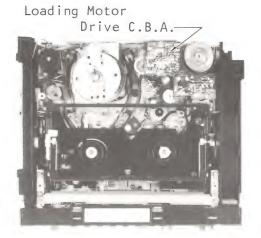
CIRCUIT BOARD LAYOUT





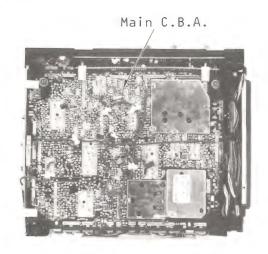
Chrominance Process & Audio C.B.A.

TOP VIEW

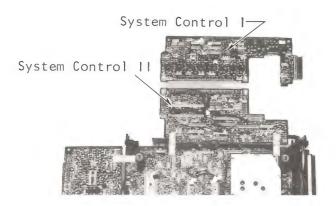




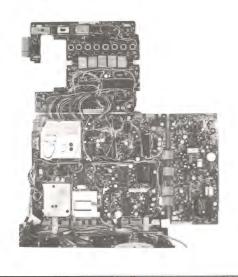
LEFT SIDE VIEW



COPPER FOIL SIDE VIEW

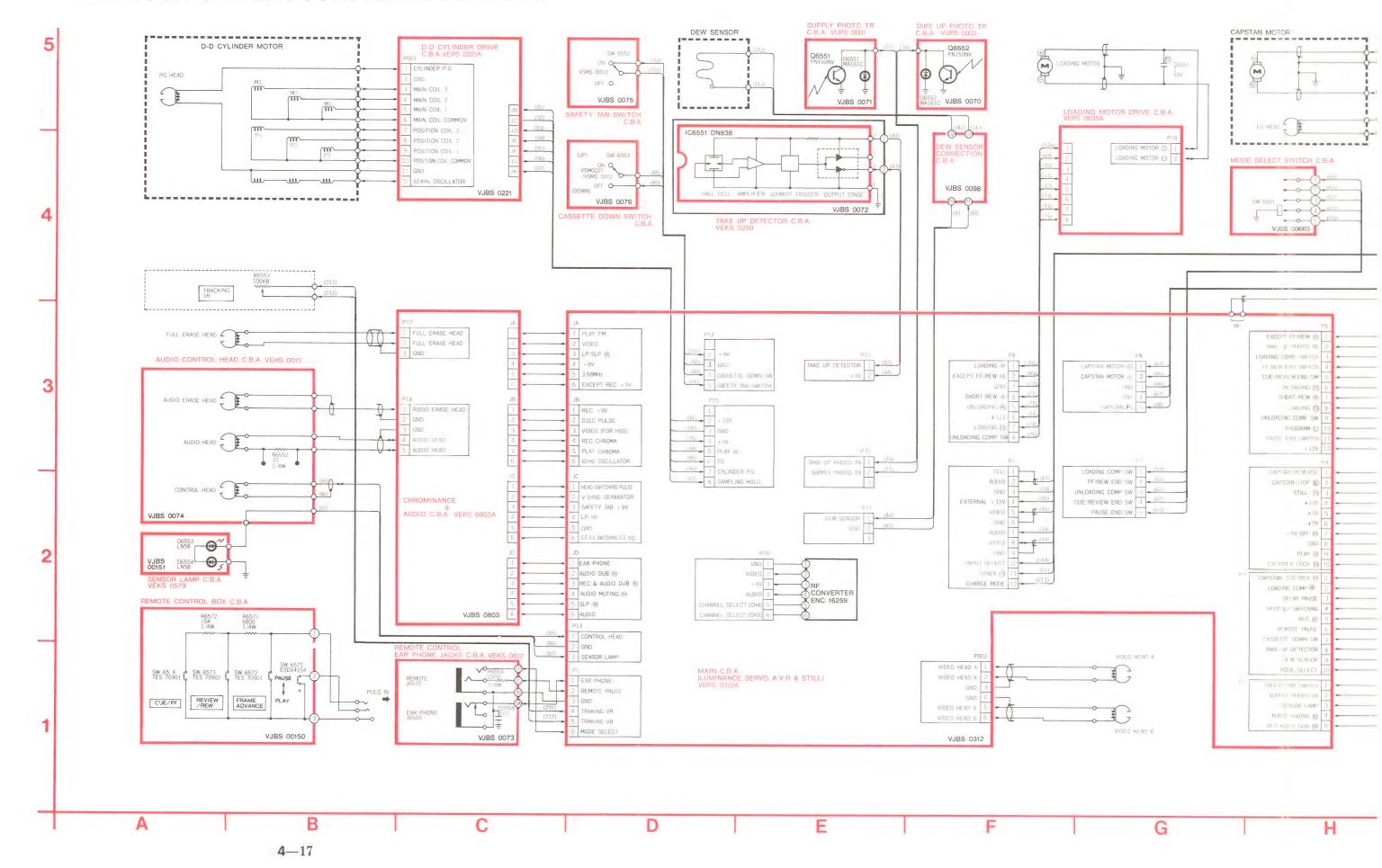


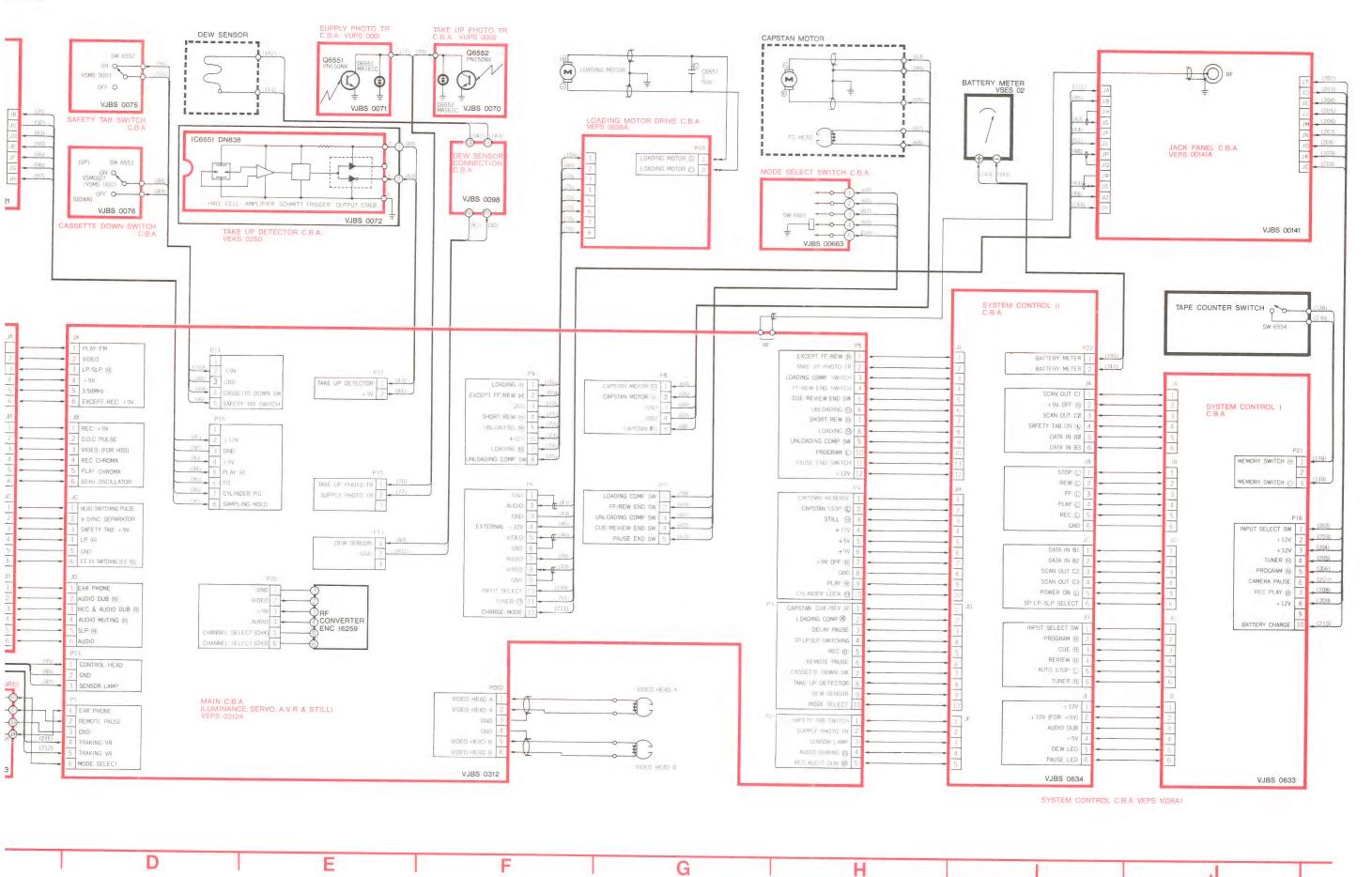
COMPONENT SIDE VIEW



4-16

INTERCONNECTION SCHEMATIC DIAGRAM





Service Ma Portable Video Cassette Recorder

Vol. 5

Exploded Views Replacement Parts List **Panasonic**



SPECIFICATIONS

Power Source:

Battery LCR-1812P

Elec. Tuner Unit PV-A32E Prog. Tuner Unit PV-A35P (Not available independently) Multiple AC Adaptor PV-A40

Power Consumption: Television System:

Approx. 9.4W at Play mode EIA Standard (525 lines, 60 fields)

NTSC color signal

Video Recording

System: 2 rotary heads helical scanning system

Luminance: FM azimuth recording Chrominance: Converted subcarrier phase shift recording

Audio Track:

1 track

Tape width 1/2" (12.7 mm), high density Tape Format:

tape

Tape Speed:

SP mode: 1-5/16 i.p.s (33.35 mm/s) LP mode: 21/32 i.p.s (16.67 mm/s) SLP mode: 7/16 i.p.s (11.12 mm/s)

Record/Playback Time: 1 (SP), 2 (LP) or 3 (SLP) hours

with NV-T60

2 (SP), 4 (LP) or 6 (SLP) hours with NV-T120

FF/REW Time:

Less than 6 min. with NV-T120

Heads:

Video: 2 Rotary heads Audio/Control: 1 stationary head

Erase: 1 full track erase

1 audio track erase for audio

dubbing

Input Level:

Video: VIDEO IN Jack (RCA type) $1.0\,\mathrm{Vp}$ -p, 75Ω unbalanced

Audio: MIC IN Jack

 $-70\,\mathrm{dB}$, 600Ω unbalanced

TV Tuners: VHF Input: VHF Ch2-Ch13,

PV-A32E 75Ω unbalanced

UHF Input: UHF Ch14-Ch83, or

PV-A35P 300Ω balanced

Video: VIDEO OUT Jack (RCA type) Output Level:

 $1.0\,\mathrm{Vp}\text{-p}$, 75Ω unbalanced

Audio: AUDIO OUT Jack (RCA type)

 $-6 \, \mathrm{dB}$, $600 \, \Omega$ unbalanced

RF Modulated: Ch3/Ch4 switchable,

72 dB μ (open voltage), 75Ω unbalanced

Video Horizontal

Resolution: More than 230 lines

Audio Frequency

Response: SP: 100 Hz~8 kHz, (10 dB down) LP: 100 Hz ~ 6 kHz, SLP: 150 Hz~5kHz

Signal-to-Noise Ratio: Video: SP mode: better than 40 dB

LP mode: better than 40 dB SLP mode: better than 40 dB (Rohde & Schwarz noise meter)

Audio: SP mode: better than 42dB LP mode: better than 40 dB SLP mode: better than 40 dB

Operating

Temperature: 32°F-104°F (0°C-40°C)

10%-75% Operating Humidity:

Weight:

13.5 lbs (6.1 kg) (with battery) Dimensions: $12"(W) \times 4-1/2"(H) \times 9-11/16"(D)$

304(W) ×114(H) ×245(D) mm

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Panasonic.

Panasonic Company Division of Matsushita Electric Corporation of America One Panasonic Way, Secaucus, New Jersey 07094

Panasonic Hawaii Inc. 320 Waiakamilo Road, Honolulu, Hawaii 96817

Panasonic Canada Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3

Panasonic Sales Company. Division of Matsushita Electric of Puerto Rico, Inc. Ave, 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630

CONTENTS

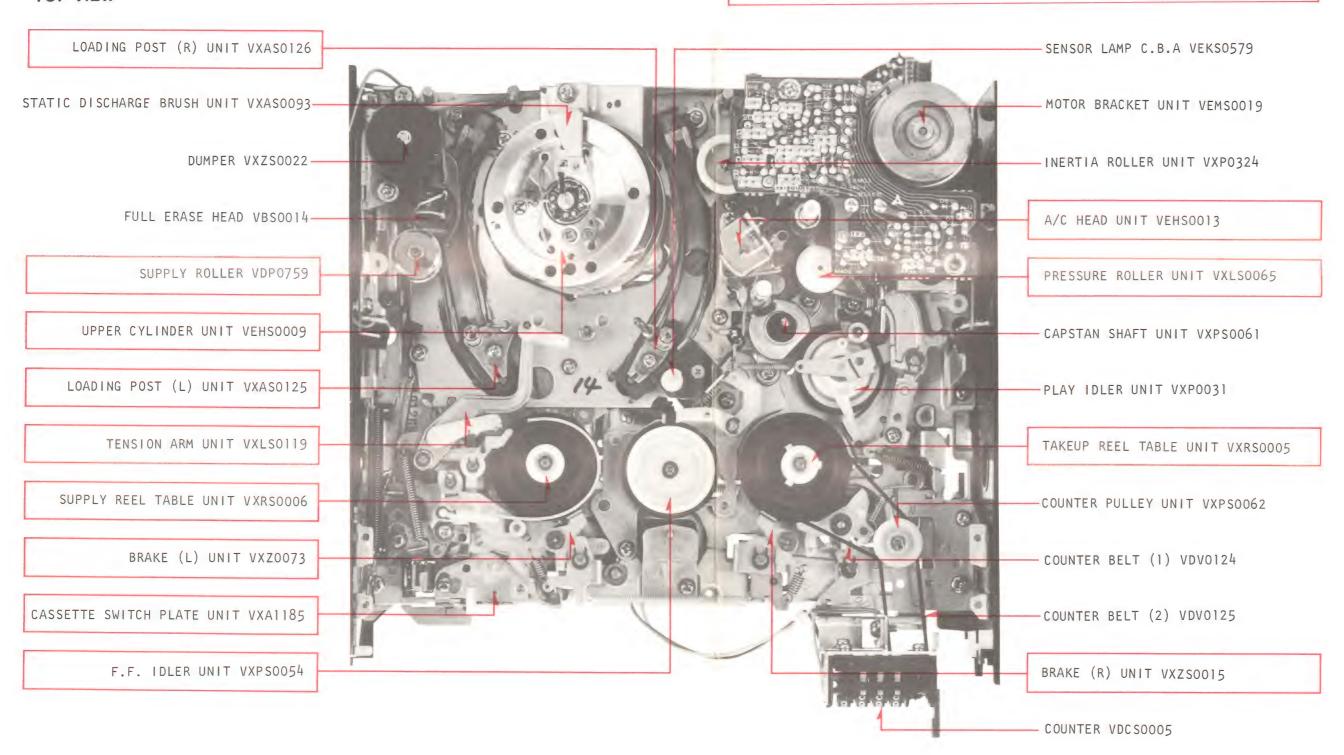
INNER PARTS LOCATION	5- 1
EXPLODED VIEWS	5- 3
1. Transport Section	5- 3
2. Moving Mechanism Section-(1)	5- 4
3. Moving Mechanism Section-(2)!	5- 5
4. Moving Mechanism Section-(3)	5- 6
5. Chassis Frame Section	5- 7
6. Casing Parts Section !	5- 8
7. Packing Parts & Accessories Section(PV-4100)	5- 9
8. Packing Parts & Accessories Section(PV-4500)	5 - 10
MECHANICAL REPLACEMENT PARTS LIST 5-11~	5-14
FLECTRICAL REPLACEMENT PARTS LIST	5-26

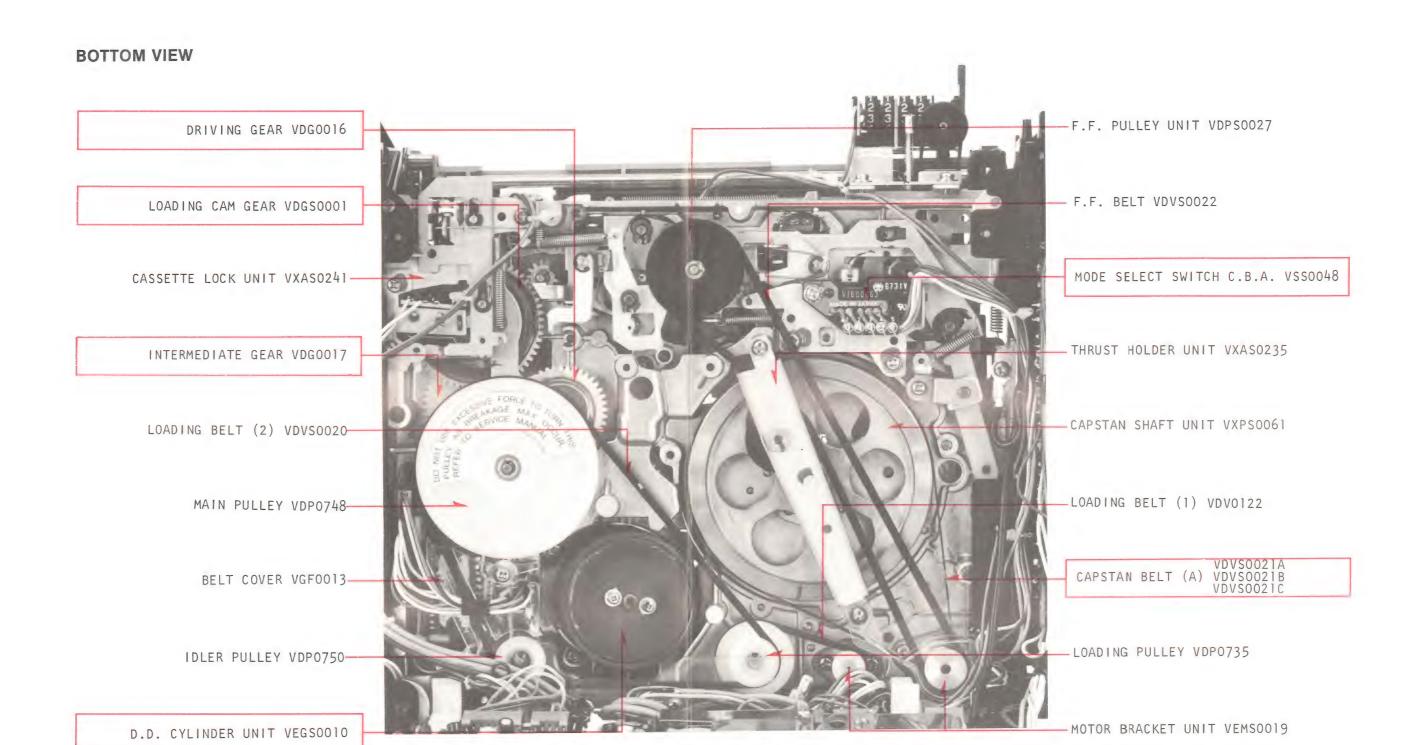
INNER PARTS LOCATION

TOP VIEW

Note:

When the mechanical parts surrounded with rectangle were removed or replaced, be sure to perform necessary adjustment or confirmation procedures according to the mechanical adjustment procedures section.





EXPLODED VIEW

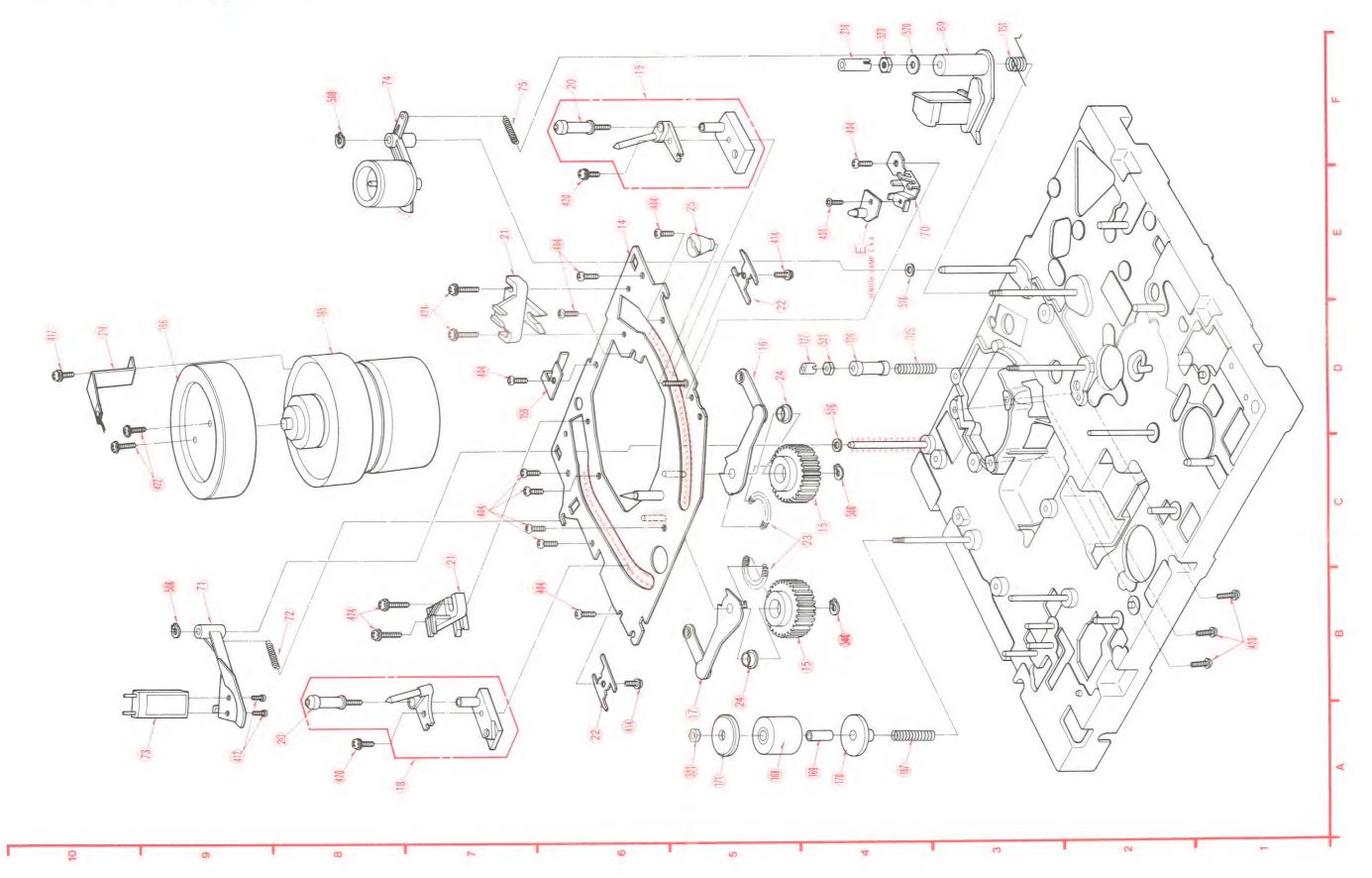
- 1. Transport Section
- 2. Moving Mechanism Section-(1)
- 3. Moving Mechanism Section-(2)
- 4. Moving Mechanism Section-(3)
- 5. Chassis Frame Section
- 6. Casing Parts Section
- 7. Packing Parts & Accessory Section (PV-4100)
- 8. Packing Parts & Accessory Section (PV-4500)

LUBRICATION POINTS

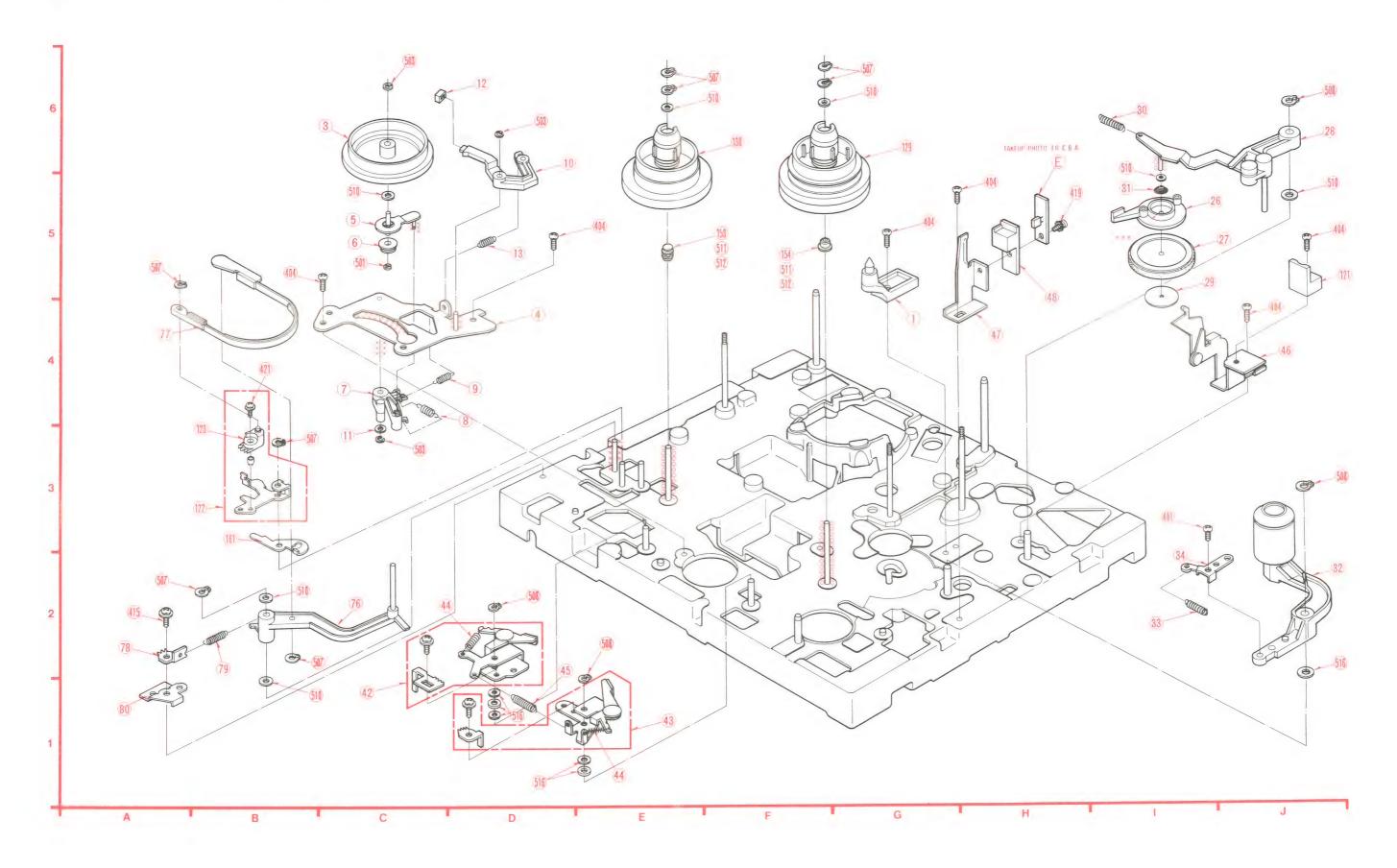
When the marked parts are replaced, apply the recommended lubricants for better maintenance of the unit.

Marks	Kind of Lubricant	Avilability	Part Number	
××× Morlytone Grease		Available From Factory	MOR265	
000	Spindle Oil	Purchase From Local Supplier		

EXPLODED VIEW 1 Transport Section



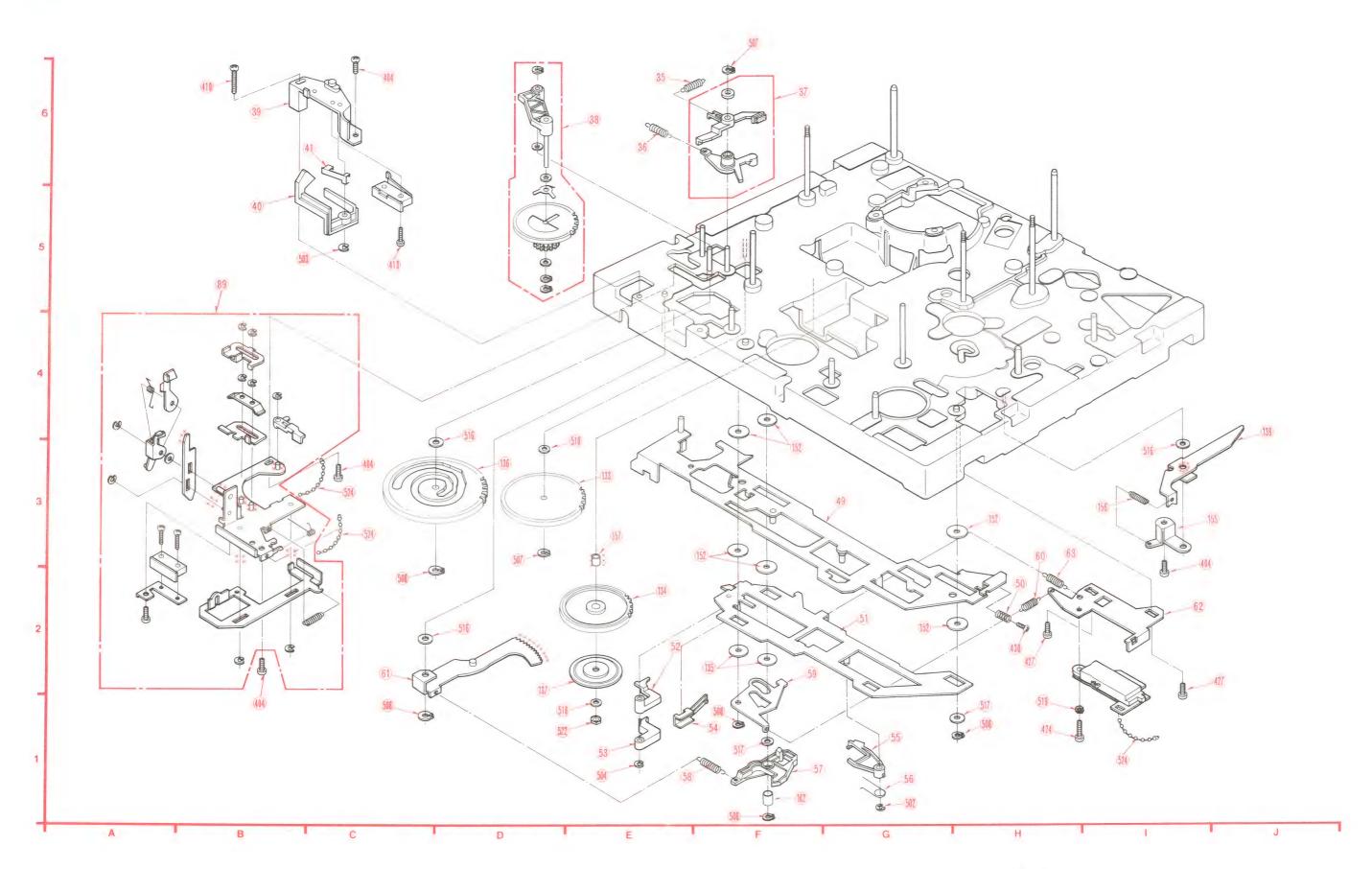
2 Moving Mechanism Section-(1)



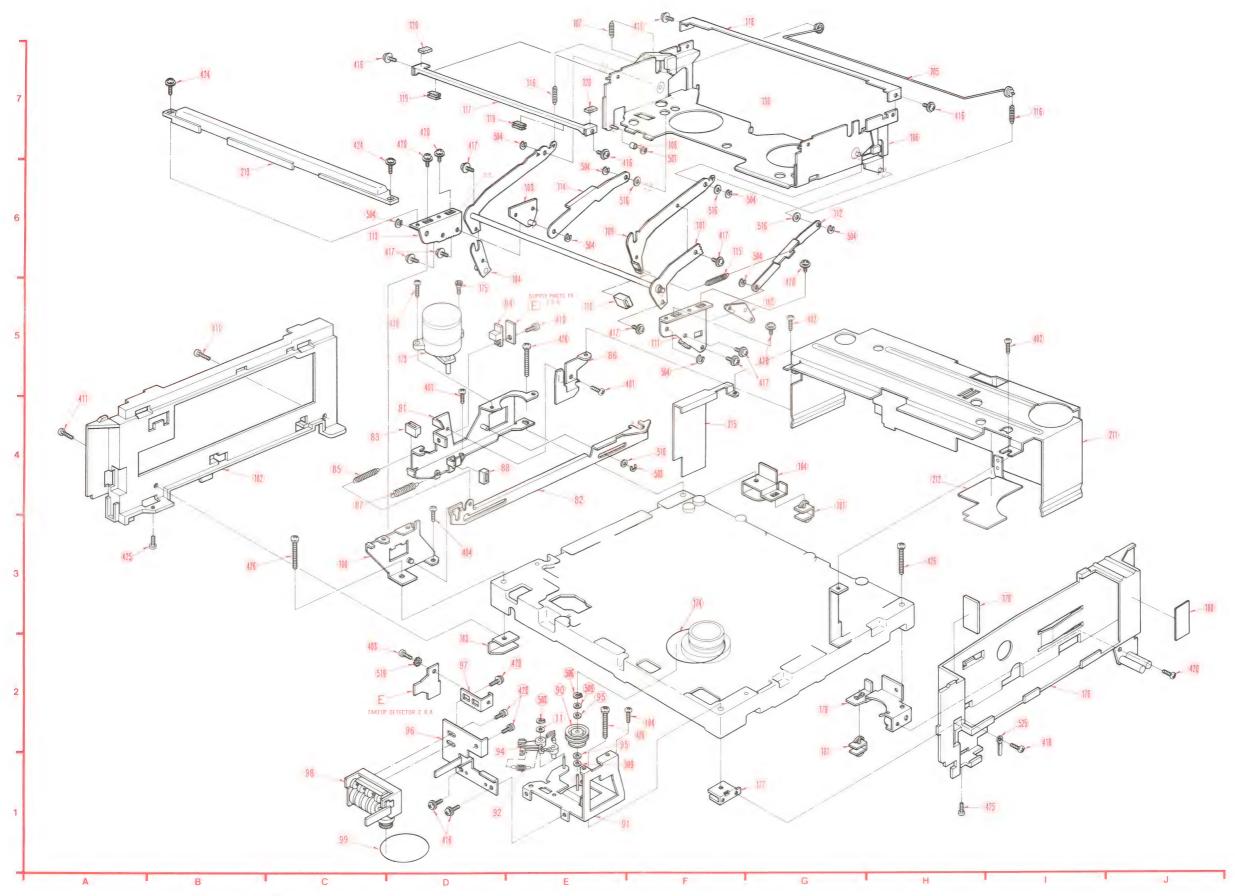
Moving Mechanism Section-(2) LOADING MOTOR DRIVE C B A LARGE PULLEY IDLER PULLEY LOADING INTERMEDIATE PULLEY

5—5

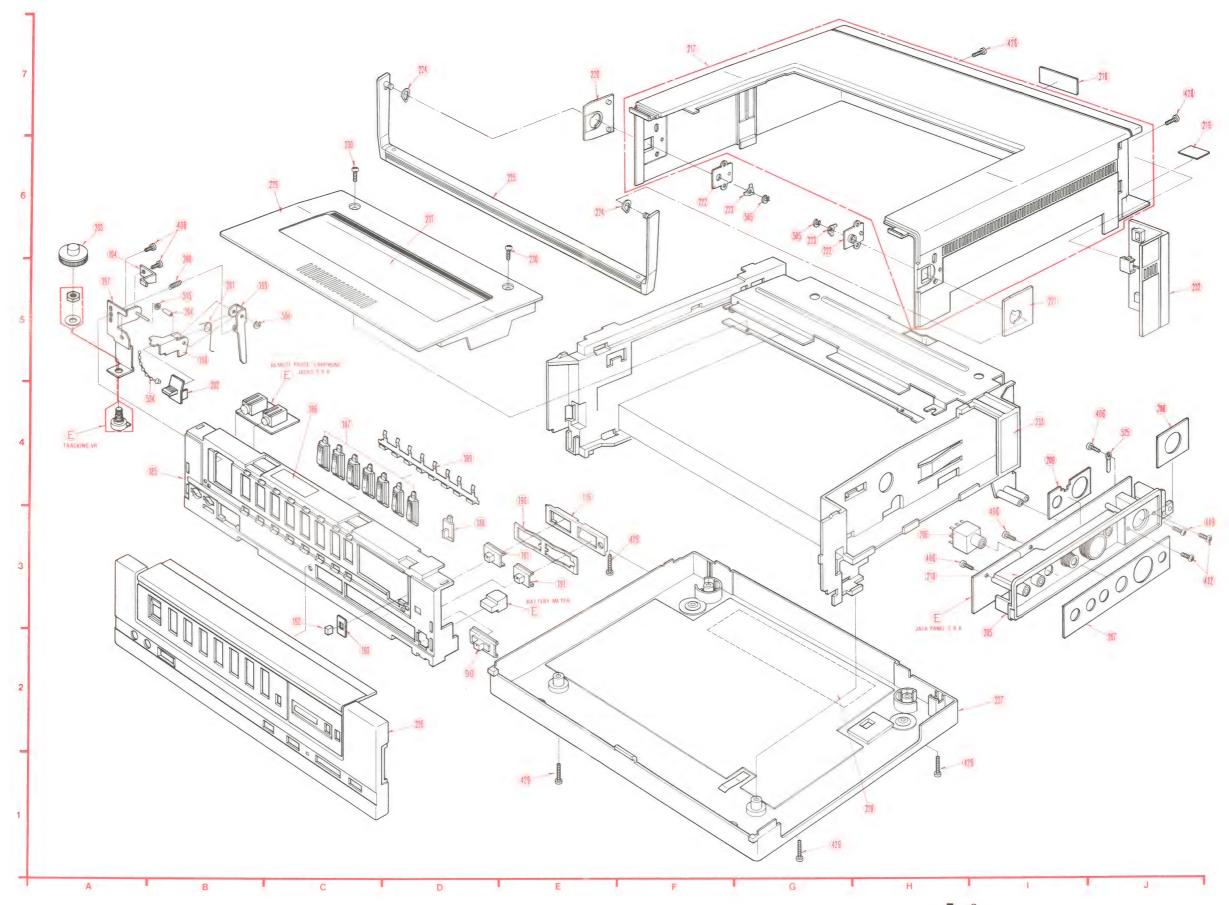
4 Moving Mechanism Section-(3)

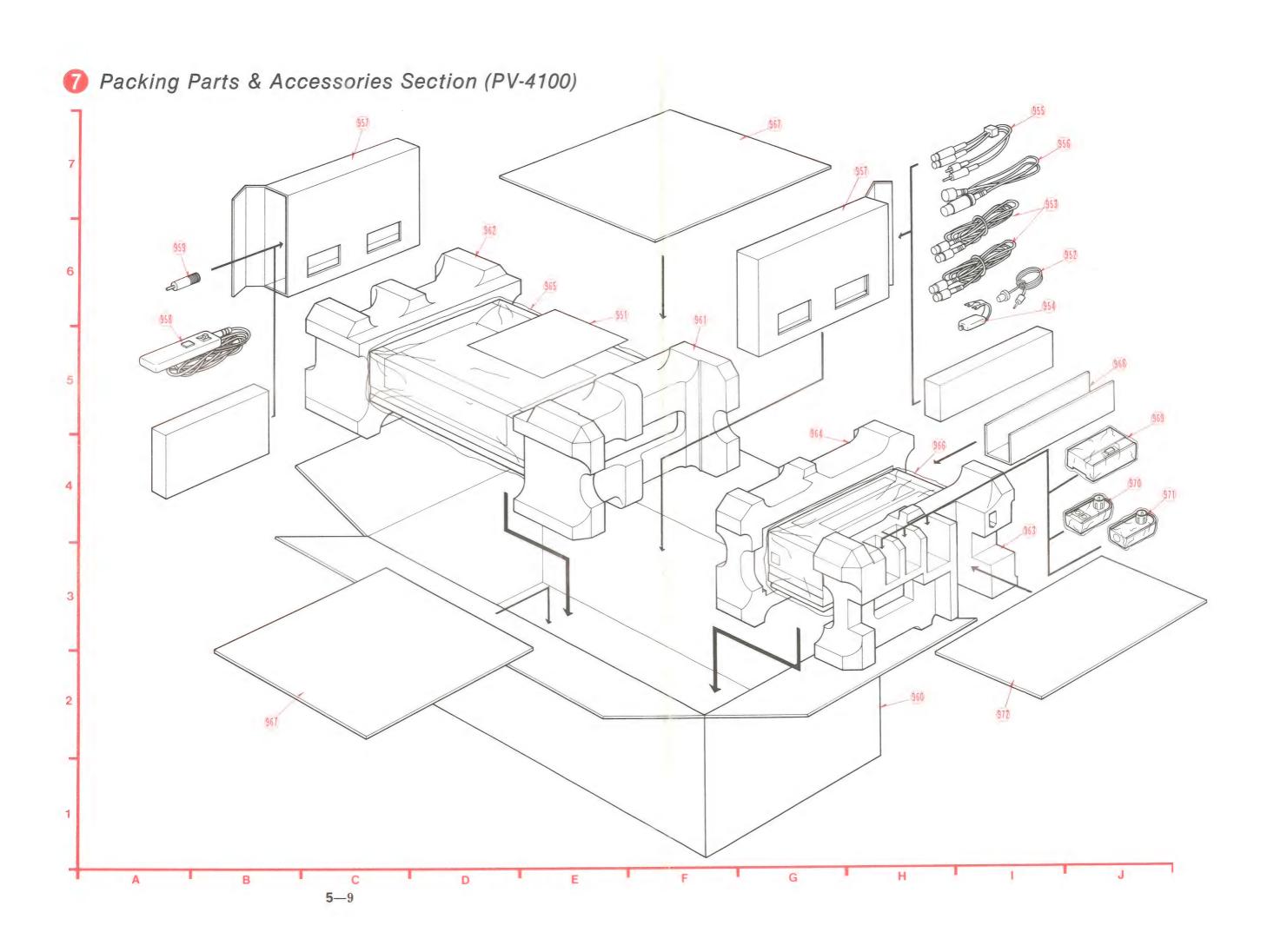


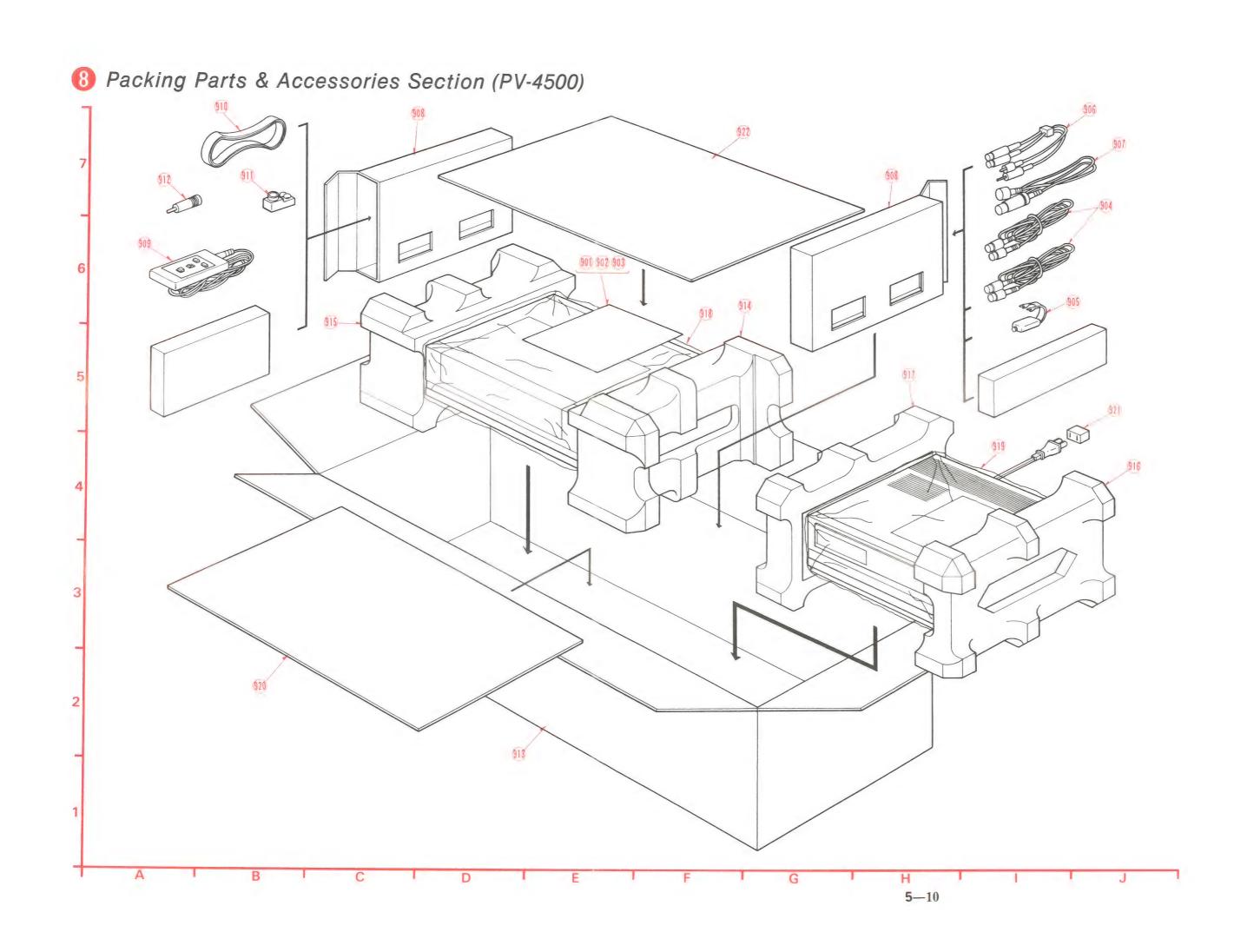
6 Chassis Frame Section



6 Casing Parts Section







MECHANICAL REPLACEMENT PARTS LIST

Model No. PV-4000

Note: *Be sure to make your orders of replacement parts according to this list.

Since all parts are available, availability colum indicates no mark.



Pcs/ Availa-Set bility

VMBS0101

Remark

Description

CAM SPRING

Drawing No.

							56	. 4	CAM SPRING	-	AWR20101
						强。	57	4	F.F. CANCEL ARM	<u> </u>	VML\$0128
							58	4	CANCEL ARM SPRING		VMBS0097
							59	4	F.F. CONTROL LEVER		VMLS0118
Item	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark	60	4	CONTROL LEVER SPRING		VMB\$0095
No.		A STATE OF THE STA			VXA1172						
	2	CASSETTE SUPPORT BRACKET	1				61	4	SELECTOR GEAR UNIT		VXLS0125
2	3	F.F. PULLEY BRACKET UNIT	1		VXAS0227		1				VMAS0471
3	2	F.F. IDLER UNIT	1		VXPS0054		62	4			
4	2	GUIDE BASE UNIT	1		VXAS0228		63	4	EJECT SPRING		VMB0677
5	2	F.F. IDLER ARM 1 UNIT	1		VXLS0110		64	3	CAPSTAN J UNIT		VXPS0061
							65	3	THRUST HOLDER UNIT		VXAS0235
6	2	GUIDE ROLLER	1		VDP0746			•			
		F.F. IDLER LEVER UNIT	1		VXLS0112		66	3	INTERMEDIATE PULLEY		VXPS0052
	2						67	3	THRUST SCREW	i	VMX0211
	2	F.F. IDLER SPRING	1		VMBS0096						VMX0157
9	2	F.F. LEVER SPRING	1		VMBS0098		68	3		:	
10	2	FRICTION LEVER	1		VML1026		69	1	A/C HEAD UNIT		VEHS0013
							70	1	SENSOR LAMP ANGLE	<u> </u>	VMAS0485
11	2,5	ST WASHER	2		VMXS0042]				
12	2	FRICTION RUBBER	1		VMG0210		71	1	ERASE HEAD LEVER	ı	VMLS0111
13	2	FRICTION LEVER SPRING	1		VMB0664		72	1	ERASE HEAD LEVER SPRING		VMB0665
	1		1	-	VXA1188		73	. 1	ERASE HEAD		VBS0014
14	<u> </u>	LOADING BASE UNIT					74	1	INERTIA ROLLER UNIT		VXP0324
15	1	LOADING GEAR UNIT	2		VXP0325		1			!	
							75		INERTIA ROLLER ARM SPRING	' . l	VMB0667
16	1	LOADING ARM (R) UNIT	1		VXL0754						
17	1	LOADING ARM (L) UNIT	1		VXL0753		76	2	TENSION ARM UNIT		VXLS0119
18	1	LOADING POST (L) UNIT	1		VXAS0125		77	2	TENSION BAND UNIT	ı '	VXZS0017
19	1	LOADING POST (R) UNIT	1		VXAS0126		78	2	ADJUST HOOK	I	VMA4089
20	1	ROLLER POST UNIT	2		VXA0743		79	2	TENSION SPRING		VMBS0105
20	'	ROLLER FOST ONT		1	***************************************		80	2	ADJUSTMENT PLATE	·	VMAS0491
			-				1		ASSOCIATION		VIIASOTSI
21	1	LOCK BASE UNIT	2	<u> </u>	VMDS0031		1	-			
22	1	SHAFT HOLDER PLATE	2		VMAS0545		81	5			VXAS0238
23	1	LOADING SPRING	2		VMB0669		82	5	CONNECT ANGLE	<u> </u>	VMM0070
24	1	ARM SLEEVE	2		VMX0257		83	5	STOPPER CUSHION (A)	l	VMG0207
25	1	ADJUST NUT	1		VHNS0006		84	5	TRANSISTOR HOLDER (L)	ı	VMD0092
26	2	PAUSE BRAKE PULLEY UNIT	1		VXP0332		85	5	HOLDER SPRING (L)	1	VMB0674
27	2	PLAY IDLER 1 UNIT	1		VXP0331		1			:	
28	2	PLAY IDLER LEVER UNIT	1		VXL0763		86	5	TRANSISTOR GUIDE	1	VMA4149
	-			-	VMX0261		87	5		1	VMBS0094
29	2	IDLER WASHER	1				-	_			
30	2	PLAY IDLER SPRING	1.		VMB0681		88	5		1	VMG0206
							89	4		1	VXAS0241
31	2	PLAY IDLER COIL SPRING	1		VMB0683		90	5	COUNTER PULLEY UNIT	1	VXPS0062
32	2	PRESSURE ROLLER UNIT	1		VXLS0065						
33	2	PRESSURE ROLLER SPRING	1		VMB0679		91	. 5	CHASSIS ANGLE R I UNIT	1	VXASO242
34	2	SPRING HOOK PLATE	1		VMAS0483		92	- 5	SOFT BRAKE SPRING (2)	1	VMBS0091
35	L	BRAKE ARM SPRING	1		VMBS0092		93	5		1	VMBS0090
	1	DRAKE ARA SI KING	1.	-	VIII030072		94	5		1	VXZS0021
			1				1				
36	4	BRAKE GUIDE SPRING	1		VMBS0093		95	5	WASHER	2	VMX0272
37	4	SOFT BRAKE UNIT	1		VXZSO014		1		CONTRACTOR OF SAME OF		
38	4	REWIND GEAR UNIT	1		VXPS0059		96	5		1	VMA4144
39	4	CASSETTE SWITCH PLATE UNIT	1	1	VXA1185		97	5	REEL SENSOR ANGLE	1	VMA4102
40	4	CASSETTE SWITCH UNIT	1	-	VML1062		98	5	COUNTER	1	VDC S0005
							99	5	COUNTER BELT (2)	1	VDV0125
41	4	LEVER SPRING	1		VMB0708		100	5		1	VXAS0245
42			1				11-00	-			
		BRAKE (L) UNIT		-	VXZ0073		1	-	WALL ARE (1)	,	WY COOR
43	L.	BRAKE (R) UNIT	1		VXZS0015		101	5	MAIN ARM (L) UNIT		VXLS0094
44		BRAKE LEVER SPRING	2		VMB0660		102	5		1 .	VXAS0120
45	2	BRAKE ARM SPRING	1		VMB0661		103	5	ADJUSTMENT PLATE (L) UNIT	1	VXAS0121
						,	104	5	STOPPER ANGLE UNIT	1	VXAS0122
46	2	CASSETTE OPENER UNIT	1	1	VXA1175		105	5	CASSETTE HOLDING ROLLER	1	VXAS0123
47	2	TRANSISTOR BRACKET (R)	1	 	VMA4096		11	+	UNIT		
48		TRANSISTOR HOLDER (R)	1	-	VMD0091	-	1	-			
49		MAIN SLIDE LEVER UNIT	-	-			106	E	CASSETTE HOLDER UNIT	1	VXAS0247
50	1		1		VXAS0230			5			
50	4	ADJUST SPRING	1	<u> </u>	VMB0680		107	5		1	VMB0678
									SPRING		
51	4	SUB ROD UNIT	1		VMAS0232		108	5	LOCK COLLAR	1	VMX0247
52	4	KICK LEVER (A)	1		VML1114		109	5	MAIN ARM (R) UNIT	1	VML1013
53	4	KICK LEVER (B)	1		VML1115		110	5		1	VMG0196
54		KICK LEVER SPRING	1	-			1			· ·	
55			+	+	VMB0744		1		HOLDED ANDLE (D)		
	1 **	KICK CAM	1		VMLS0144		1111	5	HOLDER ANGLE (R)	1	VMA4002

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark	Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
112	5	SUB ARM (R)	1		VML1014		168	1	SUPPLY ROLLER K	1	-	VDP0759	
113	5	HOLDER ANGLE (L)	1		VMA4003		169	1	COLLAR	1		VMXS0035	
114	5	SUB ARM (L)	- 1		VMLS0129		170	1	INERTIA ROLLER LOWER	1		VMXS0033	T
115	5	HOLDER SPRING (R)	1		VMBS0080	-			LIMITER				
116	5	CASSETTE HOLDING SPRING	2	T '	VMBS0073		171	1	INERTIA ROLLER UPPER	1		VMXS0034	
117	5	CASSETTE COMPARTMENT	1	Ī	VMA3985		1		LIMITER				1
		SUPPORT ANGLE (FRONT)		T			172	3	WIRE PUSH ANGLE	1	Ť	VGF0019	
118	5	CASSETTE COMPARTMENT	- 1		VMA4190		173	5	DUMPER	1		VXZS0022	
		SUPPORT ANGLE (REAR)					174	5	COUNTER BELT (1)	1		VDV0124	
119	5	PLASTIC PLATE	2		TMK98010		175	5	SCREW	1		VHD0052	
120	5	CASSETTE COVER CUSHION	2		VMTS0012		1						
_ : :							176	5	RIGHT FRAME	1		VMD0102	
121	2	DEW DETECTOR UNIT	1		VEK0817		177	5	CHASSIS ANGLE (FRONT RIGHT)	1		VMA4116	
122	2	T,C LINK UNIT	1 1		VXLS0121	1	178	5	CHASSIS ANGLE (REAR RIGHT)	1		VMAS0490	
123	2	FASTENER HOOK	1		VMDS0046		179	5	BATTERY CUSHION	1		VMF0199	
124	3	CAPSTAN HOLDER UNIT	1		VXD0054		180	5	FUSE CAUTION LABEL	1		VQLS0330	
125	_1	POST SPRING	1		VMB0699								
							181	5	HINGE (A)	2		VKC0032	
126	1	POST SLEEVE (B)	1		VMX0267		182	5	LEFT FRAME	1		VMD0103	
127	_1	POST CAP	1		VMX0271		183	5	CHASSIS ANGLE (FRONT LEFT)	1		VMA4117	
128	3	MOTOR BRACKET UNIT	1		VEMSO019		184	5	CHASSIS ANGLE (REAR LEFT)	1		VMA4119	
129	2	TAKEUP REEL TABLE UNIT	1		VXRS0005		185	6	CONTROL PANEL	1		VGPS0132	
130	2	SUPPLY REEL TABLE UNIT	1	i	VXRS0006]						
							186	6	CAUTION LABEL	1		VQLS0362	
131	3	LOADING PULLEY	1		VDP0735		187	6	OPERATION BUTTON (A)	7		VGUS0129	
132	3	IDLER PULLEY	1		VDP0750		188	6	OPERATION BUTTON (B)	1		VGUS0119	
133	4	INTERMEDIATE GEAR	1		VDG0017		189	6	BUTTON SPRING	1		VMB0685	
134	4	DRIVING GEAR	1		VDG0016		190	6	POWER SWITCH KNOB	_1		VGTS0306	
135	4	SLIDE WASHER A	2		VMX0122								
						-		6	SELECT SWITCH KNOB	2		VGTS0048	
136	4	LOADING CAM GEAR	1	-	VDGS0001		-	6	MEMORY SWITCH KNOB	1		VGT0161	
137	4	PUSH PLATE	1		VMA4088		193	6	MEMORY SWITCH COVER	1		VGQ0148	
138	3	MAIN PULLEY	1		VDP0748		194	6	EARTH SPRING	_1		VMB0709	
139	4	KICK LEVER	1		VML1040		195	6	SPRING BASE	1		VGFS0013	
140	3	INSULATOR SHEET	1		VMZ0295	·	100						
i_							196	6	SLIDE KNOB PLATE	1		VMBS0088	
	3	F.F V PULLEY UNIT	1		VDPS0027		197		EJECT LEVER ANGLE UNIT	_ !		VXAI171	
142	3	F.F BELT	1		VDVS0022		1	6	EJECT LEVER (A)	1		VML1048	
143	3	OIL SEAL	1		VMX0251		199	6	EJECT LEVER (B)	1		VML1049	
144	3	OIL POOL	1		VMD0104		200		EJECT LEVER SPRING (A)	1		VMB0686	
45	3	CAPSTAN BELT (A)	1		VDVS0021A		201	6	F IFOT A FINE ADDRESS (A)				
							202	6	EJECT LEVER SPRING (B)	1		VMB0687	-
46	3	CAPSTAN BELT (B)	_1_		VDVS0021B		203	6	EJECT BUTTON	1		VGUS0116	
47	3	CAPSTAN BELT (C)	1		VDVS0021C		204	6	TRACKING CONTROL KNOB	1		VGT0151	
	3	LOADING BELT (1)	1		VDV0122		205	6	EJECT LEVER SPACER	1		VMX0262	
49	3	LOADING BELT (2)	1		VDVS0020		20)	0	JACK PLATE	1		VJJS0025	
50	3	BELT COVER	. 1		VGF0013		206	6	VIDEO INPUT JACK				
							207	6		1		VJJ0068	
51	1	A/C HEAD SPRING	1		VMB0668		208	6	JACK PLATE DECORATION (A) JACK PLATE DECORATION (B)	1	-	VGN1407	
	4	THRUST WASHER D	6		VMX0279		209	6	10P JACK ANGLE	1	-	VGN1408	
	2	THRUST BEARING	1]		VDB0371		210	6	FUSE CAUTION LABEL	1		VMA4120	
	2	FRICTION CONTROLLER	! .		VMXS0055		-		. SOL CHOTTON LABEL	_!		VQL1053	
55		LEVER PUSH PLATE	1		VMA4095		211	5	SHIELD CASE (TOP)				
							212	5	SHIELD COVER (TOP)	1		VSCS0090	
56	-	KICK LEVER SPRING	. !		VMB0749		213	5	CASSETTE GUIDE	1		VMZ0299	
57 + -	<u>+</u>	GEAR PIPE	1 .		VMX0268		214	1	STATIC DISCHARGE BRUSH	1		VGQ0136	
58	· ;	LOADING PULLEY CAUTION	1		VQLS0263		+	17.4	UNIT	1		VXAS0093	
-		LABEL					215	5	SHIELD PLATE UNIT	1		WEEGOO'	
59 1		WIRE PUSH ANGLE	1		VMA4122		1	-	THE PERIOD OF TH	1		VXFS0006	
50 3	5	CAPSTAN THRUST WASHER	1		VMX0265		216	1	STOPPER SNAP	, +		Muyon E/	
51 + 2								6	TOP PANEL UNIT	1		VMX0256	
		BRAKE CAM LEVER	!		VMLS0124			-	COVER CAUTION LABEL	1		VYPS0713	
2 4		SPACER	1		VMXS0049		-			_		VQL50184	
3		BELT HOLDER	. 1		VMDS0051				BATTERY TERMINAL LABEL	1		VQLS0028	
3		SLIDE WASHER	1		VMXS0052				HANDLE DECORATION (L)	1	-	VGKS0361	
5 1		D.D. CYLINDER UNIT	1		VEGS0010		221	6	HANDLE DECODATION (a)	_	-		
·							\vdash		HANDLE DECORATION (R)	1		VGKS0362	
6 1		UPPER CYLINDER UNIT	1		VEHSO009	\neg	_		HANDLE SPACER	2		VGQS0345	
7 1		SUPPLY INERTIA SPRING	1		VMBS0071			~	HANDLE SPRING	2		VMB0684	

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark	Item No.	Drawing No.	Description	Pes/ Set	Availa- bility	Part No.	Remark
224	6	HANDLE COVER	2		VGQS0129						L.		<u> </u>
225	6	HANDLE UNIT	1		VYHS0006		431	1	SCREW, 2.6x6	1		XSS26+6S	
			L				432	6	SCREW, 2.6×8	2		XSS26+8S	l
	6	FRONT PANEL UNIT	1		VYPS0784		433	5	TAPPING SCREW, 3×5	1		XTV3+5FS	
	6	BOTTOM CASE UNIT	1		VYPS0298								
	6	CAUTION LABEL	1	-	VQL1051	-	-		-				
229	6	CASSETTE COVER	1		VGPS0281		 				-		
230	6	CASSETTE COVER SCREW	2	-	VHD0042		╂				 -		
0.21	,	CTICUED	١,				╂						
231	6	STICKER	1	-	VQLS0333	<u> </u>	1				+		
-		BATTERY COVER	+		VKF0049		∤		1				-
-	6	FUSE LABEL	1		VQLS0331_		╢			-			-
234	0	CLAMPER	1		VJF0013		\vdash			-	-		
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401	2,3,5	TAPPING SCREW, 3×6	6		XTV3+6FS		501	2,5	RETAINING RING(1.54,E-TYPE)	2	1	EUC15FP	
402	5	TAPPING SCREW, 3×6	2		XTV3+6FRS		502	4	RETAINING RING(20,E-TYPE)	1		XUC2FP	
403	5	TAPPING SCREW, 3×8	ī		XTV3+8F		503	2,4,5	RETAINING RING(2.5¢,E-TYPE)	6		XUC25FP	
404	1,2,3,4,5	TAPPING SCREW, 3×8	31	T	XTV3+8FS		504	4,5,6	RETAINING RING(3¢,E-TYPE)	10	1	XUC3FP	
405	3	TAPPING SCREW, 3×8	1		XTV3+8FRS		505	6	RETAINING RING(5¢,E-TYPE)	2		XUC5FP	
406	6	TAPPING SCREW, 3×10	3		XTV3+10B		506	5	RETAINING RING(2\$,C-TYPE)	1		XUEV2FP	
407	3	TAPPING SCREW, 3×10	2		XTV3+10FS		507	2,3,4	RETAINING RING(3\$,C-TYPE)	16		XUEV3FP	
408	6	TAPPING SCREW, 3×12	2		XTV3+12B		508	1,2,4	RETAINING RING(4¢,C-TYPE)	15		XUEV4FP	<u> </u>
	6	TAPPING SCREW, 3×15	1		XTV3+15B		509	5	POLYSLIDER WASHER,20	2		XWXV2A	
410	3,4	TAPPING SCREW, 3×20	2		XTV3+20FS		510	2,3,4,5	POLYSLIDER WASHER,30	16		XWXV3D	
													·
411		TAPPING SCREW, 3×8	2		XTS3+8FS		511		POLYSLIDER WASHER,30	1		XWXV3A6	
412		SCREW WITH WASHER, 2×4	2	L	XYN2+C4S		512		POLYSLIDER WASHER,3¢	1		xwxv3Z6	
413		SCREW WITH WASHER, 2×10	1		XYN2+C10		513	3	POLYSLIDER WASHER	2		XWXV3A54	
414		SCREW WITH WASHER, 3×4	2		XYN3+C4S		-		(3¢, t:0.25)				-
415	2	SCREW WITH WASHER,3×5	1		XYN3+F5S		514		POLYSLIDER WASHER, 3.5¢	1	ļ	XWXV35D6	ļ
<u> </u>						ļ .	515	6	POLYSLIDER WASHER,4¢	11		XWXV4D	-
416		SCREW WITH WASHER,3x6	6		XYN3+C6S		1				<u></u>		
417		SCREW WITH WASHER, 3x6	10		XYN3+F6S			1,2,4,5	POLYSLIDER WASHER,40	15	ļ	XWXV4D9	
418		SCREW WITH WASHER, 3×8	1		XYN3+C8S		517	-	POLYSLIDER WASHER,40	2	ļ	XWXV4D11	<u> </u>
	2,3,5	SCREW WITH WASHER, 3×8	3	-	XYN3+E8S		518		SPRING WASHER,3Ф	1		XWA3	
420	1,5	SCREW WITH WASHER, 3×8	9	<u> </u>	XYN3+F8S	1	519	+	WASHER,30	2	ļ	XWC3BF	
1.01			1				520	1	WASHER,40	1		XWG4FX	
421		SCREW WITH WASHER, 3×4	1	-	XYN3+F4		-						
422		SCREW WITH WASHER, 3×10	2	ļ	XYN3+B10BWS		521	1	M3NUT	2		XNG3B	-
423		SCREW WITH WASHER, 3×10	3		XYN3+Clos		522		M3NUT	1		XNG3C	-
	1,4,5	SCREW WITH WASHER, 3×10	7		XYN3+F10S		523	1	M4NUT	1		XNG4	<u> </u>
425	>	SCREW WITH WASHER, 3×10	2	1	XYN3+F10RS		524		FASTENER	4	-	WZBVI	<u></u>
1,00	-		1	ļ			525	5,6	CLAMPER	2	<u> </u>	VJR3	-
426		SCREW WITH WASHER, 4×30	4		XYN4+F30S		-				<u> </u>		-
427		SCREW WITH WASHER, 3×8	3		XYN3+B8FS		 						-
428		BIND SCREW, 3×6	2		XSB3+6FCWS		1				ļ		-
429		BIND SCREW, 3×16	4	-	XSB3+16KS		1						-
430		SCREW, 3×10	1	1	XSN3+105	1	11			}			1

Item No.	Drawing No.	Description	Pcs/ Set	Availa- bility	Part No.	Remark
951	7	For PV-4100 FAN BAG	-		WAESA332	
952	7	EARPHONE	1	-	VQFS0232	
	7		2		VBESO001	
953		F-F CABLE	\rightarrow	-	VJA0147	
954	7	MATCHING BOX (300/7512)	1		VSQ0055	
955	7	MIC ATTENUATOR	1	-	VJP1164	
956	7	BATTERY CONNECTION CABLE	1		VJA0148	
957	7	ACCESSORY CASE	2		VPNS0026	1
958	7	REMOTE CONTROL	1		VSQS0046	
959	7	MIC ADAPTOR	1	1	VJPS0003	_
960	7	PACKING CASE	1	 	VPGS0280	
,,,,	/	TANKING GAGE	+ '		V1 430200	
961	7	RIGHT CUSHION (DECK)	1		VPNS0023	
962	7	LEFT CUSHION (DECK)	1	+	VPNS0022	-
963	7	RIGHT CUSHION (AC)	+-	+		
505	/	RIGHT COSHION (AC)		-	VPNSO025	
964	7	LEET CHICKLON (AC)	+	1	NDMC0001	-
	7	LEFT CUSHION (AC)	1	-	VPNS0024	
965	7	POLYETHYLENE BAG (DECK)	1	-	VPFS0013	
166	7	POLYETHYLENE BAG (AC)	1	ļ	VPFS0011	
67	7	PAD A	2	_	VPGS0193	
68		CORD PAD	1	<u> </u>	VPGS0192	1
969	7	ANTENNA SELECTOR	1		VSQ\$0020	
70	7	ADAPTOR	1		TJB5251	
71	7	F CONNECTOR	1		TJB5250	
72	7	TOP PAD	1		VPGS0201	
		- James A		T		
			+	1		
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			+	+		-
			+	+-	1	-
	 	For PV-4500	+	-		 -
901	8	FAN BAG	1		VOESOLEO	-
02	8			-	VQFS0158	
		EARPHONE	1	-	VBES0001	
903	8	UHF CHANNEL FILM	1	ļ	VGQ0143	<u> </u>
904	8	F-F CABLE	2		VJA0147	
05	8	MATCHING BOX (300/75Ω)	1	_	VSQ0055	
106	8	MIC ATTENUATOR	1		VJP1164	
07	8	BATTERY CONNECTION CABLE	1		VJA0148	
80	8	ACCESSORY CASE	2		VPNS0026	
109	8	REMOTE CONTROL BOX	1		VSQS0046	
10	8	TWIN LEAD CABLE	1		VJA0102	
11	8	VHF ANTENNA ADAPTOR	1		VSQ0057	
12	8	MIC ADAPTOR	1		VJPS0003	-
13	8	PACKING CASE	1		VPGS0282	
14	8	RIGHT CUSHION (DECK)	1	-	VPNS0023	+
15	8	LEFT CUSHION (DECK)	1		VPNS0023	+
_		/ Cosmon (DECK)	1		VFN30022	
16	8	PICHT CHCHION (TIMES)	1		MDMCCCC	
-	8	RIGHT CUSHION (TUNER)	1		VPNS0021	
	8	LEFT CUSHION (TUNER)	1	+	VPNS0020	-
-	8	POLYETHYLENE BAG (DECK)	1		VPFS0013	
		POLYETHYLENE BAG (TUNER)	1	-	VPFS0012	
20	8	PAD (B)	2		VPGS0194	
			-			
	8	PLUG COVER	1		VPN0428	
22	8	TOP CUSHION	1		VPNS0050	
[T			
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POST ADJ. SCREWBRIVER	These items are only available on special order VHS ALIGNMENT TAPE VFM8080H6 DIAL TORQUE GAUGE VFK0133 PLASTIC CLAMPER ADAPTOR FOR VFK0133 ECCENTRIC SCREWDRIVER VFK0134 ECCENTRIC SCREWDRIVER VFK0135 FINE ADJ. SCREWDRIVER VFK0136 POST ADJ. SCREWDRIVER VFK0137 POST ADJ. SCREWDRIVER VFKS0010 REEL TABLE HEIGHT FIXTURE VFKS0009 TENSION POST ADJ. FIXTURE VFKS0002 H-POSITION ADJ. FIXTURE VFKS0003 CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 RETAINING RING REMOVER VFK0145 FOR "Ammob HEX. WRENCH VFK0146 FOR 0.9mm HEX. WRENCH VFK0146 VFK0146 FOR 0.9mm HEX. WRENCH VFK0146 VFK0146 FOR 0.9mm	tem No.	Drawing No.	Description	Pes/ Set	Availa- bility	Part No.		Remark
VHS ALIGNMENT TAPE	VHS ALIGNMENT TAPE VFM8080H6 DIAL TORQUE GAUGE PLASTIC CLAMPER ADAPTOR FOR VFK0133 ECCENTRIC SCREWDRIVER FINE ADJ. SCREWDRIVER POST ADJ. SCREWDRIVER VFK0136 FOST ADJ. SCREWDRIVER VFK0137 POST ADJ. PLATE REEL TABLE HEIGHT FIXTURE VFKS0009 TENSION POST ADJ. FIXTURE VFKS0002 H-POSITION ADJ. FIXTURE VFKS0003 CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 RETAINING RING REMOVER VFK0145 FOR Mammy HEX. WRENCH VFK0166 FOR 0.9mm HEX. WRENCH VFK0166 VFK76 VFK76 VFK76 VFK77 FOR 1.5mm		*	SERVICING FIXTURE & TOOLS				+	
VHS ALIGNMENT TAPE	VHS ALIGNMENT TAPE VFM8080H6 DIAL TORQUE GAUGE PLASTIC CLAMPER ADAPTOR FOR VFK0133 ECCENTRIC SCREWDRIVER FINE ADJ. SCREWDRIVER POST ADJ. SCREWDRIVER VFK0136 FOST ADJ. SCREWDRIVER VFK0137 POST ADJ. PLATE REEL TABLE HEIGHT FIXTURE VFKS0009 TENSION POST ADJ. FIXTURE VFKS0002 H-POSITION ADJ. FIXTURE VFKS0003 CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 RETAINING RING REMOVER VFK0145 FOR Mammy HEX. WRENCH VFK0166 FOR 0.9mm HEX. WRENCH VFK0166 VFK76 VFK76 VFK76 VFK77 FOR 1.5mm								
DIAL TORQUE GAUGE	DIAL TORQUE GAUGE			These items are only availa	ble on	speci	al order		
DIAL TORQUE GAUGE	DIAL TORQUE GAUGE			VIIS ALLCHMENT TARE)/F#9090U/	-	
PLASTIC CLAMPER	PLASTIC CLAMPER								
ADAPTOR FOR VFK0133 VFK0134 ECCENTRIC SCREWDRIVER VFK0135 FINE ADJ. SCREWDRIVER VFK0136 FOR 3mms POST ADJ. SCREWDRIVER VFKS0010 REEL TABLE HEIGHT FIXTURE VFKS0009 TENSION POST ADJ. FIXTURE VFKS0002 H-POSITION ADJ. FIXTURE VFKS0003 CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 FOR 3mms RETAINING RING REMOVER VFK0145 FOR 4mms HEX. WRENCH VFK0146 FOR 0.9m HEX. WRENCH VFK76 FOR 1.5m	ADAPTOR FOR VFK0133 VFK0134 ECCENTRIC SCREWDRIVER VFK0135 FINE ADJ. SCREWDRIVER VFK0136 for 3mm POST ADJ. SCREWDRIVER VFK0137 POST ADJ. PLATE VFKS0010 REEL TABLE HEIGHT FIXTURE VFKS0009 TENSION POST ADJ. FIXTURE VFKS0002 H-POSITION ADJ. FIXTURE VFKS0003 CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 for 3mm RETAINING RING REMOVER VFK0145 for 4mm HEX. WRENCH VFK0146 for 0.9mm HEX. WRENCH VFK76 for 1.5mm HEX. WRENCH VFK76 for 1.5mm HEAD CLEANING STICK VFK27						-	- i - -	
ECCENTRIC SCREWDRIVER	ECCENTRIC SCREWDRIVER							_:-	
FINE ADJ. SCREWDRIVER	FINE ADJ. SCREWDRIVER POST ADJ. SCREWDRIVER POST ADJ. PLATE REEL TABLE HEIGHT FIXTURE TENSION POST ADJ. FIXTURE WFKS0002 H-POSITION ADJ. FIXTURE WFKS0003 CASSETTE HOLDER FIXTURE WFKS0004 GUIDE PIN FIXTURE WFKS0007 RETAINING RING REMOVER WFK0144 FOR 3mm\(D) RETAINING RING REMOVER WFK0145 FOR 4mm\(D) HEX. WRENCH WFK76 WFK76 WFK77 FOR 1.5mm HEAD CLEANING STICK								
POST ADJ. SCREWDRIVER	POST ADJ. SCREWDRIVER VFK0137	_							
POST ADJ. PLATE	POST ADJ. PLATE							for	3mm Φ
REEL TABLE HEIGHT FIXTURE	REEL TABLE HEIGHT FIXTURE								
TENSION POST ADJ. FIXTURE	TENSION POST ADJ. FIXTURE			POST ADJ. PLATE			VFKS0010		
H-POSITION ADJ. FIXTURE	H-POSITION ADJ. FIXTURE			REEL TABLE HEIGHT FIXTURE			VFKS0009		
CASSETTE HOLDER FIXTURE VFKS0004 GUIDE PIN FIXTURE VFKS0006 V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 for 3mm; RETAINING RING REMOVER VFK0145 for 4mm; HEX. WRENCH VFK0146 for 0.9m HEX. WRENCH VFK76 for 1.5m HEAD CLEANING STICK VFK27	CASSETTE HOLDER FIXTURE			TENSION POST ADJ. FIXTURE			VFKS0002		
GUIDE PIN FIXTURE	GUIDE PIN FIXTURE VFKS0006			H-POSITION ADJ. FIXTURE			VFKS0003	_	
V-STOPPER ADJ. FIXTURE VFKS0007	V-STOPPER ADJ. FIXTURE VFKS0007 RETAINING RING REMOVER VFK0144 for 3mmφ RETAINING RING REMOVER VFK0145 for 4mmφ HEX. WRENCH VFK0146 for 0.9mm HEX. WRENCH VFK76 for 1.5mm HEAD CLEANING STICK VFK27			CASSETTE HOLDER FIXTURE			VFKS0004		
RETAINING RING REMOVER VFK0144 for 3mm RETAINING RING REMOVER VFK0145 for 4mm HEX. WRENCH VFK0146 for 0.9m HEX. WRENCH VFK76 for 1.5m HEAD CLEANING STICK VFK27	RETAINING RING REMOVER			GUIDE PIN FIXTURE			VFKS0006		
RETAINING RING REMOVER VFK0145 for 4mmt HEX. WRENCH VFK0146 for 0.9m HEX. WRENCH VFK76 for 1.5m HEAD CLEANING STICK VFK27	RETAINING RING REMOVER VFK0145 for 4mmb HEX. WRENCH VFK0146 for 0.9mm HEX. WRENCH VFK76 for 1.5mm HEAD CLEANING STICK VFK27			V-STOPPER ADJ. FIXTURE			VFKS0007		
HEX. WRENCH VFK0146 for 0.9m HEX. WRENCH VFK76 for 1.5m HEAD CLEANING STICK VFK27	HEX. WRENCH VFK0146 for 0.9mm HEX. WRENCH VFK76 for 1.5mm HEAD CLEANING STICK VFK27			RETAINING RING REMOVER			VFK0144	for	3ттф
HEX. WRENCH	HEX. WRENCH VFK76 for 1.5mm HEAD CLEANING STICK VFK27			RETAINING RING REMOVER			VFK0145	for	4mm¢
HEAD CLEANING STICK VFK27	HEAD CLEANING STICK VFK27			HEX. WRENCH			VFK0146	for	0.9mm
				HEX. WRENCH			VFK76	for	1.5mm
				HEAD CLEANING STICK			VFK27		
		-					MOR265		
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ELECTRICAL REPLACEMENT PARTS LIST

Model No. PV-4000

Note:
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified by shade have special characteristics important for safety. When replacing any of these possets, sace only the original case.

Component	s identified by shade has	re special characteristics important for se	fety. Wh	en replacing any of these com-	R1002	ERDIOTJ332		3.31	K 1	
Unless other	erwise specified:				R1003	ERDIOTJ681		680	0 1	
All capacito	ors are in MICROFARA	7, ±5% carbon, K=1,000Ω, M=1,000 KΩ. ΔDS (μ F), ±10% P= $\mu\mu$ F.			R1004	ERX12ANJR56	Metal Film	1/2W 0.56	6 1	
All coils are	e in MICROHENRIES ruit Board Assembly.	(μH) , m=10 ³ μ .			R1005	ERDIOTJ333		331	K 1	
5. C.B: Circuit	t Board.				R1006	EVN38CA00B53	Variable	51	K 1	
			Pes		R1007	ERDIOTJ123		121		
Ref. No.	Part No.	Part Name & Description	Set	Remarks	R1008	ERDIOTJ393	<u> </u>	39k	_	
	VEPS0312A	MAIN C P A	-		R1009	ERDIOTJ153		15¥	_	
	VEF30312A	MAIN C.B.A.	1		R1011	ERDIOTJ332		3.3k	_	
	VEPS0803A	CHROMINANCE & AUDIO C.B.A.	1		R1012	ERD10TJ682		6.8	_	
	VELSOOOJA	CHROITINANCE & ADDIO C.B.A.	-		R1013	ERDIOTJ473		47K		
	VEPS1026A1	SYSTEM CONTROL C.B.A.	1		R1014	EVN38CA00B15	Variable	100K		
_	VEI STOZOMI	STATES CONTINUE C.B.A.	-		R1015	ERD10TJ473		47K		+
	VEPS0221A	D.D. CYLINDER DRIVE C.B.A.	1		R1017	ERD25VJ124		120K		
					R1018	ERDIOTJ562 ERDIOTJ104		5.6K	\rightarrow	ļ
	VEPS0635A	LOADING MOTOR DRIVE C.B.A.	1	-	R1019			100K	_	
					R1020,1021	ERD25FJ2R2		1/4W 2.2		
	VEPS00141A	JACK PANEL C.B.A.	1		R1020,1021	ERDIOTJ223 ERDIOTJ103	<u> </u>	22K		
					R1023	ERD10TJ473		10K	-	
	VEKS0579	SENSOR LAMP C.B.A.	1		R1024	ERX12ANJ1RO		47K		
					11024	LKX (ZANS) KO		1/2W 1	1	
	VEKS0250	TAKEUP DETECTOR C.B.A.	1						+	<u> </u>
				7777			+		+	
	VUPS0001	SUPPLY PHOTO TR C.B.A.	1				Capacitors		+-	_
				******	C1001	ECEA1CSS221		6V 220	1	
	VUPS0002	TAKEUP PHOTO TR C.B.A.	1		C1002	ECEA1HK010		60V 1	_	-
					C1003	ECEA1ASS221	-	OV 220		
	VEKS0612	REMOTE PAUSE/EARPHONE			C1004	ECEA10Z330		OV 330	_	
		JACKS C.B.A.			C1005	ECEA1HK2R2	Electrolytic 5		_	
					1		z.ostrorytre ,	2.2	+-	
									+	
									+ -	
		MAIN C.B.A.			C1006	ECEA1CSS101	Electrolytic 1	6V 100	1	
					C1007	ECEA1ASS221		OV 220		
		POWER SUPPLY SECTION			C1008,1009	ECEAICSS101		6V 100		
					C1010	ECKW1H122KB5		OV 0.0012		
					C1011	ECKF1H222KB		OV 0.0022	Ti-	
		Integrated Circuits			C1012	ECKZ1H472ZF		OV 0.0047	1	
101001	BA6122		1		C1013	ECEATASS221	Electrolytic 1	OV 220	i 1	
101002	VCR0033		1		C1014	ECKW1H103ZF5	Ceramic 5	OV 0.01	1	
101003	VCR0025		1				-			
									 	/ 11
			i				Coils		1	
					L1001	VLQ0066	Dummy		1	
		Transistors			L1002	VLQ0067	Dummy		1	
Q1001	2SA886V(R)		1		L1003	VLQ0066	Dummy		1	
	or 2\$B772(P,Q)		700	L1004	VLQS66F100K		10	T i	
Q1002	2SA719(Q)		1		L1005	VLQ0069	Dummy		1	
21003	2SB759(R,S)	<u> </u>	1		L1006	VLQ0078	Dummy		1	
21004,1005	2SD946		2							
9001	2SB793(R,S)		1			!			i i	
1007,1008	2SB643(Q,R)		2							
1009	25B641(Q,R)		1		TH1001	ERTD2F1L154S	Thermistor		1	
			-				i			
			-			<u> </u>				
					RY1001	V\$Y\$0005	Relay		1	
1001 1000		Diodes								
1001,1002	ERA81-004		2		F1001	XBA1CDNU100	Fuse 1A		1	
1004	or EK-04		-							
1004	ERA81-004	1	1			+			_	
1005	or EK-04		+-				-			
1005	MA165 or ISSII	9	1				Connector			
	-				PI	VJP\$1151	6P		1	
					P2	VJPS1150	5P		1	
					P3,4	VJPS1146	10P		2	
					P5,6	VJPS1147	12P		2	

Ref. No.

R1001

Part No.

ERD10TJ473

ERDIOTJ332

Part Name & Description

47K

3.3K 1

Resistors

Proceedings Process	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
10 10 10 10 10 10 10 10	P7,8	VJPS1150	5P	2		Q2024-2027	2SD636(Q,R)	- ^ -	4	
1	P9	VJPS1152	:8P	1		Q2701-2704	2SD636(Q,R)		4	
1921 1921 1921 1	PIO	VJPS1148	2P	1		Q2705	2SB641(Q,R)		1	
Part	P11	VJPS1149	3P	1		Q2706,2707	2SD636(Q,R)		1	
1	P12	VJPS1148	2P	1			-			
15	P13	VJPS1149	3P	1	46					
15	P14	VJPS1150	5P	1					:	
17	P15	VJP\$1152	8P	1				Diodes	1	
18	P16	VJPS1103	IOP	1		D2001-2021	MA165		21	
19	P17	VJPS1142	3P	1			or 188119			
	P18	VJPS1143	5P	1		D2023-2029	MA165		7	
192 1941 19	P19	VJPS1148	2P	1			or 188119			
	P21	VJPS1157	3P	1		D2030	MA150FV		1	
	P22	VJPS1141	2P	1		D2701-2703	MA165		3	
	P001	VJPS1147	12P	1			or 188119		!	
ROOF CHOPTOTAL CHOPTOTAL	P002	VJPS1144	6P	_1_						
ROOF CHOPTOTAL CHOPTOTAL										
ROOF CHOPTOTAL CHOPTOTAL			******							
R0002 CR01071274 2700 1		· · · · · · · · · · · · · · · · · · ·		į. Į.		i		Resistors		
REDOR REDORAGE R			***	1				8.2K	1	
R2004 R2004 R2005 R200	ļ							270K	1	
R2005 C-19/08-CAD025 C-19/08-CAD02	ļ							220K	1	
R2006 R20171103 10K 1	i-								1	
		- ;	<u> </u>	<u></u>				Variable 200K	1	
								150к	1	
R009 REBUTIZZEZ 228 1		+						10K	1	
R2010 R2017J04 10000 1								100К	1	
NOTE			-					22K	1	
R2013 EWSSCA00925 Variable 200K 1	ļ								1	
	<u> </u>	. 4	-+ ···-	-				+	1	
		-	!					Variable 200K	1	
Record R									1	
SERVO 4 STILL SECTION	+	<u> </u>		i.		-		Variable 200K	1	
R2018 R2019333 339K 1	<u> </u>					R2016	ERDIOTJ183	18K	1	
R2018 R2019333 339K 1		·	05010 - 07111 0707111	-	the state of the s					NAME OF THE OWNER O
Representation Repr			SERVO & STILL SECTION	-				Variable 100K	1	
				-				39К	1	Service delicated resources of the service of the s
12001 R46350 1 R2021 EVBSCA00B\$4 Variable 50K 1			 						1	
C2002 UPP04027C	152001	44/250	Integrated Circuits						1	T 1400 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
C2003 DN819			· · · · · · · · · · · · · · · · · · ·					Variable 50K	1	a para language and a company
1	-	****	+	_				look	-1	
1			ļi					2.2K	1	
1								1/4W 180K	1	
				_				82K	1	
								47K	1	
1	102701			<u> </u>				1/4W 4.7K	1	
1	162702							1/4W 10K	1	
R2031 ERDIOTJ564 566K 1			-					47K	1	
R2032 ERDIOTJI04 100K 1	-	DNOTS							1	
R2033 ERDIOTJI52 1.5K 1	+	•						560K	1	
R2034 RRDIOTJ272 2.7K 1		 		-				100K	1	
Q2001 250636(Q,R) 1 R2035 ERDIOTJ822 8.2K 1 Q2002 250889(Q,R) 1 R2036 ERC14GK225D 1/4W 2.2 1 Q2003 250636(Q,R) 1 R2037 ERDIOTJ332 3.3K 1 Q2004 250636(R) 1 R2038 ERDIOTJ04 100K 1 Q2005 250641(R,S) 1 R2039,2040 ERDIOTJ473 47K 2 Q2006 250636(Q,R) 1 R2041 ERD25TJ105 1 1 Q2007-2009 250636(Q,R) 3 R2042 ERDIOTJ153 15K 1 Q2010,2011 250641(R,S) 2 R2043 ERDIOTJ183 18K 1 Q2012,2013 250636(Q,R) 2 R2044 ERDIOTJ163 15K 1 Q2014 250636(Q,R) 2 R2044 ERDIOTJ153 15K 1 Q2015 250636(Q,R) 1 R2045 ERDIOTJ153 15K 1 Q2016 250636(Q,R) 1 R2046 ERDIOTJ183 18K 1 Q2016 250636(Q,R) 1 R2047 ERDIOTJ273 27K 1 Q2017,2018 250636(Q,R) 2 R204			+	-					1	
Q2002 25D889(Q,R) 1 R2036 ERC14GK225D 1/4W 2,2 1 Q2003 25D636(Q,R) 1 R2037 ERD10TJ332 3.3K 1 Q2004 25D636(R) 1 R2038 ERD10TJ04 100K 1 Q2005 25B641(R,S) 1 R2039,2040 ERD10TJ473 47K 2 Q2006 25D636(Q,R) 1 R2041 ERD25TJ105 1 1 Q2007-2009 25D636(Q,R) 3 R2042 ERD10TJ153 15K 1 Q2010,2011 25B641(R,S) 2 R2043 ERD10TJ183 18K 1 Q2012,2013 25B636(Q,R) 2 R2044 ERD10TJ153 15K 1 Q2014 25B641(R,S) 1 R2045 ERD10TJ153 15K 1 Q2015 25B636(Q,R) 2 R2044 ERD10TJ153 15K 1 Q2015 25B641(R,S) 1 R2045 ERD10TJ153 18K 1	02001	200(2((0.0)	Transistors					2.7K	1	
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Q2005 258641 (R, S) 1 R2039,2040 ERDIOTJ473 47K 2 Q2006 25D636(Q, R) 1 R2041 ERD25TJ05 1 1 Q2007-2009 25D636(Q, R) 3 R2042 ERDIOTJ153 15K 1 Q2010,2011 25B641(R, S) 2 R2043 ERDIOTJ183 18K 1 Q2012,2013 25D636(Q, R) 2 R2044 ERDIOTJ101 100 1 Q2014 25B641(R, S) 1 R2045 ERDIOTJ153 15K 1 Q2015 25B636(Q, R) 1 R2045 ERDIOTJ153 15K 1 Q2015 25B636(Q, R) 1 R2046 ERDIOTJ233 18K 1 Q2016 25B774(R, S) 1 R2047 ERDIOTJ273 27K 1 Q2017,2018 25B636(Q, R) 2 R2048 ERDIOTJ274 220K 1 Q2019 25B641(R, S) 1 R2049, 2050 ERDIOTJ473 47K 2				-						
Q2006 25D636(Q,R) 1 R2041 ERD25TJ105 1 1 Q2007-2009 25D636(Q,R) 3 R2042 ERD10TJ153 15K 1 Q2010,2011 25B641(R,S) 2 R2043 ERD10TJ183 18K 1 Q2012,2013 25D636(Q,R) 2 R2044 ERD10TJ101 100 1 Q2014 25B641(R,S) 1 R2045 ERD10TJ153 15K 1 Q2015 25D636(Q,R) 1 R2046 ERD10TJ183 18K 1 Q2016 25B774(R,S) 1 R2046 ERD10TJ273 27K 1 Q2017,2018 25B636(Q,R) 2 R2048 ERD10TJ224 220K 1 Q2019 25B641(R,S) 1 R2049,2050 ERD10TJ473 47K 2 Q2019 25B641(R,S) 1 R2049,2050 ERD10TJ473 47K 2										
Q2007-2009 25D636(Q,R) 3 R2042 ERDIOTJI53 15K 1 Q2010,2011 25B641(R,S) 2 R2043 ERDIOTJI83 18K 1 Q2012,2013 25D636(Q,R) 2 R2044 ERDIOTJI01 100 1 Q2014 25B641(R,S) 1 R2045 ERDIOTJI53 15K 1 Q2015 25B636(Q,R) 1 R2046 ERDIOTJI83 18K 1 Q2016 25B774(R,S) 1 R2047 ERDIOTJ273 27K 1 Q2017,2018 25B636(Q,R) 2 R2048 ERDIOTJ273 27K 1 Q2019 25B641(R,S) 1 R2049 ERDIOTJ473 47K 2 Q2019 25B641(R,S) 1 R2049,2050 ERDIOTJ473 47K 2 Q2020-2022 25D636(Q,R) 3 ERDIOTJ473 47K 2			i						2	
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R2078 R2079 R2080 R2081 R2082 R2083 R2084, 2085 R2086 R2087 R2088	ERD25VJ123 ERD25VJ223 ERD25VJ473 ERD10TJ274 ERD10TJ473 ERD10TJ182	1/4w 12K 1/4w 22K 1/4w 473 270K	1		R2901	ERDIOTJ823	82K	1	
R2079 R2080 R2081 R2082 R2083 R2084 R2084, 2085 R2086 R2087 R2088	ERD25VJ223 ERD25VJ473 ERD10TJ274 ERD10TJ473 ERD10TJ182	1/4W 22K 1/4W 473 270K			R2902	ERD10TJ822	8.2K	1	
R2080 R2081 R2082 R2083 R2084,2085 R2086 R2087 R2088	ERD25VJ473 ERD10TJ274 ERD10TJ473 ERD10TJ182	1/4W 473 270K			R2903	ERD25FJ1R8	1/4W 1.8	1	
R2081 R2082 R2083 R2084,2085 R2086 R2087 R2088	ERD10TJ274 ERD10TJ473 ERD10TJ182	270К	1		1				
R2082 R2083 R2084,2085 R2086 R2087 R2088 R2088	ERDIOTJ473 ERDIOTJ182		1 -		-				
R2083 R2084,2085 R2086 R2087 R2088 R2088	ERD10TJ182		1						
R2084 , 2085 R2086 R2087 R2088 R2088		47K	1				Capacitors		
R2086 R2087 R2088 R2089 R2090	EKUIUIJ103	1.8K	1		C2001	ECQV05223JZ	Polyester Film 50V 0.022	. 1	
R2087 R2088 R2089 R2090 R2091	ERD10TJ184	10K	2	* * * * * * * * * * * * * * * * * * * *	C2002	ECQV05104JZ	Polyester Film 50V 0.1µF	1	
R2088 R2089 R2090 R2091		180K	1		C2003	ECQM1H103KZ	Polyester Film 50V 0.01	1	
R2089 R2090 R2091	ERDIOTJ333	33K	1						
R2090 R2091	ERD25TJ105	1/4W 1	1		-				
R2090 R2091									
R2090 R2091					-				
R2090 R2091			\dashv		-				
R2090 R2091	ERD10TJ153	15K	1		C2004	ECOMPUL ZAKA	D-1 511- 5010 0017	1	
R2091	ERDIOTJ223	22K	1		C2004	ECQM1H472KZ ECSF35ER33KE	Polyester Film 50V0.0047	1.	
	ERDIOTJ152	1.5K	1		C2006,2007	ECEATHKO10	Tantalum 35V 0.33 Electrolytic 50V 1	2	
	ERD10TJ391	390	1		C2008,2007		Polyester Film 50V 0.015	2	
R2093	ERDIOTJ562	5.6K	1		C2000,2009	ECQV05153JZ ECQV05223JZ	Polyester Film 50V 0.013	1	
	ERDIOTJ102	IK	1		C2011,2012	ECQV05104JZ	Polyester Film 50V 0.022	2	
R2095-2098	ERDIOTJ473	47K	4		C2013	ECEATOZ100	Electrolytic 10V 100	1	
R2099	ERDIOTJ563	56K	1	***************************************	C2014	ECEATHKR47	Electrolytic 50V 0.47	1	
	ERDIOTJ333	33K	2		C2015	ECEATHKOR1	Electrolytic 50V 0.1	1	
	ERDIOTJ181	180	1		C2016	ECKW1H271KB5	Ceramic 50V 270P	1	
	ERD25TJ105	1/4W 1	1		C2017	ECEATASS331	Electrolytic 10V 330	1	
32104	ERDIOTJ184	180K	1		C2018	ECSF35ER1KE	Tantalum 35V 0.1	1	
R2105	ERDIOTJ273	27K	1		C2019	ECKF1H331KB	Ceramic 50V 330P	1	
R2106	ERDIOTJ152	1.5K	1		C2020	ECEATAK470	Electrolytic 10V 47	1	
R2107	ERD25TJ105	1/4W 1	1	THE PARTY OF THE P	C2021	ECEAOJK220		1	
	ERDIOTJ393	39K	1		C2022	ECQV05104JZ	Polyester Film 50V 0.1	1	-
12109	ERD10TJ223	22K	1		C2023	VCY25223KX	Semi Conductor 0.023	1	
12110 E	ERDIOTJ823	82K	1		C2024	ECQV05104JZ	Polyester Film 50V 0.1	<u>-</u>	
2111 E	ERD10TJ104	100K	1		C2025	ECQV05473JZ	Polyester Film 50V 0.047	1	
2112,2113	ERD10TJ473	47K	2	The state of the s	C2026	VCY25682KX	Semi Conductor 0.0068	1	
2114 E	ERD10TJ332	3.3K	1		C2027	ECQV05104JZ	Polyester Film 50V 0.1	1	
2117 E	ERD25VJ223	1/4W 22K	1		C2028	ECEAOJK101	Electrolytic 6.3V 100	1	
	ERDIOTJ473	47K	2		C2029-2031	ECEATHKO10	Electrolytic 50V 1	3	
	ERD10TJ103	10K	1	199.	C2032	ECSF35ER27KE		1	
	ERDIOTJ822	8,2K	1		C2032,2034	ECQV05104JZ	Polyester Film 50V 0.1	2	
	ERD10TJ473	47K	1		C2035	ECEATAK470	Electrolytic 10V 47	1	
	ERDIOTJ223	22K	2	The second secon	C2036	ECQV05274JZ	Polyester Film 50V 0.27	1	
	ERD10TJ472	4.7K	1		C2037	ECQV0527432	Polyester Film 50V 0.27	1	
	ERDIOTJ103	lok	1		C2037	ECQM1H103KZ	Polyester Film 50V 0.15	1	
	ERD10TJ124	120K	1		C2039,2040	ECEA1AK470	Electrolytic 10V 47	2	
	ERD10TJ222	2.2K	1		5235,2040	EVENIANT/U	2.3061019610 100 4/	-	
	ERDIOTJ103	10K	1		1			+	
	ERDIOTJ273	27K	1		1	+		+	
		-/K		***************************************	1			-	
						+		\rightarrow	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C2041	ECEA0JK101	Electrolytic 6.3V 100	1	14-14 # //		 	LUMINANCE SECTION	341	
C2042	ECQM1H103KZ	Polyester Film 50V 0.01	1		1			-	
C2043	ECQV05473JZ	Polyester Film 50V 0.047	1					+	11 11 11 11 11 11 11 11 11 11 11 11 11
C2044	ECEASOZ2R2	Electrolytic 50V 2.2	1				Integrated Circuits		
C2045	ECQM1H103KZ	Polyester Film 50V 0.27	1		IC3001	AN6310	***************************************	1	
C2046,2047	ECEATEK4R7	Electrolytic 25V 4.7	2		103002	AN6320N		1	
C2048	ECEA1AK220	Electrolytic 10V 22	1		103003	AN6332	1174	1	
C2049 C2050	ECEATHK010	Electrolytic 50V 1	1		103004	AN304		1	
C2051	ECEAOJK470 ECKW1H103ZF5	Electrolytic 6.3V 47 Ceramic 50V 0.01	1		103005	AN6321 VCR0028	<u> </u>	1	
C2052	ECEA1ASS221	Ceramic 50V 0.01 Electrolytic 10V 220	1		IC3006	VCR0028		1	-
C2701	ECQM1H392KZ	Polyester Film 50V 0.0039	1		103007	VCR0013		1	
C2702	ECSF35ER33KE	Tantalum 35V 0.33	1		10,000	VEROUTS		4	
C2703	ECSF35ER1KE	Tantalum 35V 0.1	1		1		·	-	
C2704	ECEA1CK100	Electrolytic 16V 10	1			:		1	
C2705	ECQM1H103KZ	Polyester Film 50V 0.01	1	***	1		Transistors		
C2706	ECQM1H102KZ	Polyester Film 50V 0.001	1		Q3001,3002	2\$B641(R,S)		2	
C2707	ECKW1H681KB5	Ceramic 50V 680P	1		Q3003-3005	2SD638(Q,R)		3	
C2708	ECEA1AK220	Electrolytic 10V 22	1		Q3006	25C2206(B,C)		1	
C2709	ECEA1CK470	Electrolytic 16V 47	1	YAF -	Q3007	2SC2377(C,D)		1	
					03008	2SB641(R,S)		1	
					03009	2SD636(Q,R)	4	1	
					-		Diodes		
			-		D3001,3002	ISS16 or	1-12	2	
	-				-	18886 or 18899			
					D3003-3008	MA165		6	
_						or ISS119			
	:		-		-		:		
					-			-	
:					1		Resistors		
					R3001	ERD10TJ123	1	1	
				77-1-1-1	R3002	EVN38CAOOB24	Variable 20K		
					R3003	ERDIOTJ684	680K		N. C.
C2901	ECKZ1H472ZF	Ceramic 50V 0.0047	1		R3004	ERDIOTJ152	1.5K	1	
C2902	ECEAICS331S	Electrolytic 16V 330	1		R3005	ERD10TJ221	220	1	
C2906	ECKF1H103ZV	CEramic 50V 0.01	1		R3006	ERDIOTJ222	2.2K	1	
					R3007	ERDIOTJ102	1K	1	
			-		R3008	ERD10TJ122	1.2K	1	
			_	700	R3009	EVN38CAOOB53	Variable 5K	1	
			‡		R3010	ERDIOTJ102	1K	1	
		Coil	- i		R3011	ERD10TJ272	2.7K	1	
L2001	VLQS66F100K	10	1	W/W	R3012	ERDIOTJ821	820	1	
					R3013	ERDIOTJ153	15K	1	
				****	R3015	ERDIOTJ333 ERDIOTJ392	33K	1	
					R3016	ERDIOTJ681	3.9K 680	1	
					R3017	ERDIOTJ182	1.8K	1	
					R3018	ERDIOTJ122	1.2K		
				51	R3019	ERDIOTJ394	390К	1	
					R3020	ERDIOTJ332	3.3K	1	
					R3021	ERDIOTJ223	22K	1	
					R3022	ERDIOTJ333	33К	1	**
	<u> </u>				R3023	ERDIOTJ183	18K	1	
	ļ				R3024	ERDIOTJ562	5.6K	1	
					R3025,3026	EVN38CA00B53	Variable 5K	2	
					R3027	ERDIOTJ562	5.6K	1	
			-		R3028	EVN38CA00B53	Variable 5K	1	
+			- 1		R3029	ERDIOTJ820	82	1	
+			+	W.A	R3030	ERDIOTJ821	820	1	
			-		R3031	ERDIOTJ152	1.5K	1	
			-		R3032 R3033	ERD10TJ223	22K	1	
	1		-		R3034	ERDIOTJ272 ERDIOTJ100	2.7K	1	
	·· †		+		R3035	ERDIOTJ100	10	1	
						-MD10102/2	2.7K	1	
			-		R3036	FR010T-1100			
			i		R3036 R3037	ERDIOTJ100 ERDIOTJ122	10	1	
					R3036 R3037 R3038	ERD10TJ100 ERD10TJ122 ERD10TJ473			

R3041 R3042 R3043 R3044 R3045 R3046 R3048 R3049 R3050 R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059 R3059	ERDIOT561 ERDIOTJ822 ERDIOTJ471 ERDIOTJ471 ERDIOTJ471 ERDIOTJ561 ERDIOTJ473 EVN38CA00823 ERDIOTJ472 ERDIOTJ472 ERDIOTJ475 ERDIOTJ561 ERDIOTJ473 ERDIOTJ561 ERDIOTJ561 ERDIOTJ561 ERDIOTJ680 ERDIOTJ680 ERDIOTJ123 ERDIOTJ123	560 8.2k 390 470 8.2k 560 47K Variable 2k 4.7k 2.7k 560	Set		C3012 C3013 C3014 C3015 C3016 C3017	ECKW1H102KB5 ECEA0JK470 ECEA1AK330 ECCZ1H820K ECVIZW40X53N	Ceramic Electrolytic Electrolytic Ceramic	50V 0 6.3V 10V 50V	47 33 82P	1 1 1	
R3043 R3044 R3045 R3046 R3048 R3049 R3050 R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJ822 ERDIOTJ391 ERDIOTJ471 ERDIOTJ822 ERDIOTJ561 ERDIOTJ473 EVN38CA00823 ERDIOTJ472 ERDIOTJ272 ERDIOTJ272 ERDIOTJ272 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00823 ERDIOTJ680 ERDIOTJ123	8.2K 390 470 8.2K 560 47K Variable 2K 4.7K 2.7K 560	1 1 1 1 1 1 1		C3013 C3014 C3015 C3016 C3017	ECEAOJK470 ECEA1AK330 ECCZ1H82OK ECVIZW4OX53N	Electrolytic Electrolytic	6.3V 10V	47	1	
R3043 R3044 R3045 R3046 R3048 R3049 R3050 R3051 R3052 R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJ391 ERDIOTJ471 ERDIOTJ471 ERDIOTJ561 ERDIOTJ561 ERDIOTJ473 EVN38CA00B23 ERDIOTJ472 ERDIOTJ472 ERDIOTJ561 ERDIOTJ561 ERDIOTJ561 ERDIOTJ561 ERDIOTJ602 ERDIOTJ602 ERDIOTJ602 ERDIOTJ602 ERDIOTJ602 ERDIOTJ603	390 470 8.2K 560 47K Variable 2K 4.7K 2.7K	1 1 1 1 1 1		C3014 C3015 C3016 C3017	ECEATAK330 ECCZTH820K ECVTZW40X53N	Electrolytic	100	33	1	
R3044 R3045 R3046 R3048 R3049 R3050 R3051 R3052,3053 R3055 R3055 R3057 R3058 R3059 R3060	ERDIOTJ471 ERDIOTJ822 ERDIOTJ561 ERDIOTJ473 EVN38CAOOB23 ERDIOTJ472 ERDIOTJ561 ERDIOTJ561 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CAOOB23 ERDIOTJ680 ERDIOTJ123	470 8.2K 560 47K Variable 2K 4.7K 2.7K 560	1 1 1 1 1 1		C3015 C3016 C3017	ECCZ1H82OK ECV1ZW4OX53N				_	1
R3045 R3046 R3048 R3049 R3049 R3050 R3051 R3052,3053 R3055 R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJ822 ERDIOTJ561 ERDIOTJ473 EVN38CAOOB23 ERDIOTJ472 ERDIOTJ561 ERDIOTJ561 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CAOOB23 ERDIOTJ680 ERDIOTJ123	8.2K 560 47K Variable 2K 4.7K 2.7K 560	1 1 1 1 1 1 1		C3016 C3017	ECVIZW40X53N	ceramic	201	02P		T
R3046 R3048 R3049 R3049 R3050 R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059	ERDIOTJ561 ERDIOTJ473 EVN38CA00823 ERDIOTJ472 ERDIOTJ272 ERDIOTJ272 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00823 ERDIOTJ680 ERDIOTJ123	560 47K Variable 2K 4.7K 2.7K 560	1 1 1 1 1		C3017				1000		
R3048 R3049 R3050 R3051 R3052,3053 R3054 R3055 R3056 R3056 R3058 R3058	ERDIOTJ473 EVN38CA00823 ERDIOTJ472 ERDIOTJ272 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00823 ERDIOTJ680 ERDIOTJ123	47K Variable 2K 4.7K 2.7K 560	1 1 1		-		Trimmer		40P		
R3049 R3050 R3051 R3052,3053 R3054 R3055 R3056 R3056 R3058 R3058 R3058	EVN38CA00B23 ERD10TJ472 ERD10TJ272 ERD10TJ561 ERD10TJ331 ERD10TJ102 EVN38CA00B23 ERD10TJ680 ERD10TJ123	Variable 2K 4.7K 2.7K 560	1 1		C3018	ECCF1H121J	Ceramic	500	120P	1	
R3050 R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059	ERDIOTJ472 ERDIOTJ272 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00823 ERDIOTJ680 ERDIOTJ123	4.7K 2.7K 560	1			ECCW1H151J	Ceramic	50V	150P	1	
R3051 R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059	ERDIOTJ272 ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00B23 ERDIOTJ680 ERDIOTJ123	2.7K 560	1		C3019	ECEATAK330	Electrolytic	107	33	1	
R3052,3053 R3054 R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJ561 ERDIOTJ331 ERDIOTJ102 EVN38CA00B23 ERDIOTJ680 ERDIOTJ123	560			C3020	ECKZ1H472ZF	Ceramic	50V 0.	0047	1	
R3054 R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJ331 ERDIOTJ102 EVN38CA00B23 ERDIOTJ680 ERDIOTJ123		2		C3021	ECCF1H680J	Ceramic	50V	68P	1	
R3055 R3056 R3057 R3058 R3059 R3060	ERDIOTJIO2 EVN38CA00B23 ERDIOTJ680 ERDIOTJ123	330	~	V 10 V2-104 A	C3022	ECCW1H331J5	Ceramic	50V	330P	1	
R3056 R3057 R3058 R3059 R3060	EVN38CA00B23 ERDIOTJ680 ERDIOTJ123		1		C3023	ECEA1CK100	Electrolytic	16V	10	1	
R3057 R3058 R3059 R3060	ERDIOTJ680 ERDIOTJ123	1K	1		C3024	ECEA1CK470	Electrolytic	16V	47	- 1	
R3057 R3058 R3059 R3060	ERDIOTJ680 ERDIOTJ123	Variable 2K	1		C3025	ECEATAK330	Electrolytic	100	33	1	
13058 13059 13060	ERDIOTJ123	68	1		C3026	ECKZ1H472ZF	Ceramic	50V 0.		1	
R3059 R3060		12K	<u> </u>				<u> </u>				
3060				******	C3027	ECEA1AK330	Electrolytic	10V	33	1	
		100K	1		C3028	ECEA1HK010	Electrolytic	50V	1	1	
	ERDIOTJ473	47K	1		C3029	ECEATCK100	Electrolytic	160	10	1	
3061,3062	ERDIOTJ102	1K	2		C3030	ECEA1HK010	Electrolytic	50V	1.	_1	
3063	ERD10TJ391	390	1		C3031,3032	ECV1ZW60X64	Trimmer		60P	2	
3064	ERD10TJ102	1 K	1		C3033,3034	ECKZ1H472ZF	Ceramic	50V 0.	0047	2	
3065	ERD10TJ222	2,2K	1		C3035	ECEA1HK010	Electrolytic	50V	1.	1	
3066	ERD10TJ274	270К	1		C3036	ECEA1CK100	Electrolytic	160	10	1	
3067,3068	ERD10TJ392	3.9K	2		C3037	ECKZ1H472ZF	Ceramic	50V O.		1	
3069	ERD1013332	820	1			· ·		_			
3070	ERDIOTJ182	· · · · · · · · · · · · · · · · · · ·			C3038	ECCF1H680J	Ceramic	50V	68P		
	+	1.8K	1		C3039	ECKZ1H472ZF	Ceramic	50V O.		1	
13071	ERDIOTJ471	470	1		C3040	ECCF1H47OK	Ceramic	500	47P	1	
3072	ERDIOTJ332	3.3K	1		C3041,3042	ECKZ1H472ZF	Ceramic	50V O.	0047	2	
3073	ERDIOTJ562	5.6K	1		C3043	ECCF1H680J	Ceramic	50V	68P	- 1	
3074	ERDIOTJ331	330	1		C3044	ECKF1H472ZF	Ceramic	50V 0.	0047	1	
13075	ERD10TJ222	2.2K	1		C3045	ECCZ1H151K	Ceramic	50V	150P	1	
3076,3077	ERDIOTJ152	1.5K	1		C3046	ECCW1H471J5	Ceramic		470P	1	
3078	ERDIOTJ182	1.8ĸ	1		C3047	ECEATAK470	Electrolytic			- !	
3079	ERDIOTJ471		1		C3048			100	47		
3080		470				VCKW1H431JSA	Ceramic		430P		· · · · · · · · · · · · · · · · · · ·
3081	ERDIOTJ271 EVN38CA00B13	Variable 1K	1		C3049	ECEA1AK330	Electrolytic	100	33	_!_	
3082					C3050	ECKW1H103ZF5	Ceramic		0.01	1	
	ERDIOTJ334	330K	1		C3051,3052	ECKZ1H472ZF	Ceramic	50V O.		2	
13083	ERDIOTJ682	6.8K	1		C3053	ECCZ1H220KC	Ceramic	50V	22P	1	l
13084	ERDIOTJ102	1K	1		C3054	ECKW1H103ZF5	Ceramic	50V	0.01	1	
3085	ERD10TJ222	2.2K	1		C3055	ECKZ1H472ZF	Ceramic	50V O.	0047	- 1	
3086	ERDIOTJ182	1.8K	1	71940.444	C3056	ECKZ1H472ZF	Ceramic	50V	56P	1	
3087	ERDIOTJ472	4.7K	1		C3057,3058	ECKZ1H472ZF	Ceramic	50V 0.	0047	2	
3088-3090	ERD10TJ332	3.3K	3		C3059	ECEAOJK220	Electrolytic	6.3V	22	- 1	
3091	ERDIOTJ560	56	1		C3060	ECCZIHIOIJ	Ceramic		100P	1	
3092	ERDIOTJ102	1κ	1		C3061	ECEAOJK470		6.3V	47	1	
3093	EVN38CAOOB13	Variable IK	-								
3094					C3062	VCY25473KX	Semi Conductor		.047	1	
	ERDIOTJ680	68	1		C3063	ECEA1HK010	Electrolytic	50V	1 !	1	
3095	ERD10TJ122	1.2K	1		C3064	ECQM1H182KZ	Polyester Film			_1	
3096	ERDIOTJ334	330K	1		C3065	ECQV05823JZ	Polyester Film	50V 0	082	1	
3097	ERDIOTJ391	390	1		C3066	ECKZ1H472ZF	Ceramic	50V 0.I	0047	1	
3098	ERDIOTJ101	100	1 :		C3067	ECCWIHI81J5	Ceramic	50V	80P	1	
3099	ERDIOTJ471	470	1		C3068	ECCF1H680J			00P		
3100	ERDIOTJ102	1K	1	77.17.	C3069	ECEA1CK100		160	10		
3101	ERD10TJ821	820	1		C3070	ECEAOJK470			47		
3102	ERDIOTJ822		1		-			6.30		1	
3103		8.2K			C3071	ECEA1ASS221		100	220	1	
	ERD25TJ272	1/4W 2.7K	1		C3072	ECCF1H680J		50V	68P	1	
3122,3123	EVN38CA00B13	Variable 1K	2		C3073	ECEAICK100		16V	10	1	
					C3074	ECCF1H270KC	Ceramic	50V	27P	1	
		Capacitors			C3075	ECEA1ASS101	Electrolytic	100	100	1	Market 14 & 25 C C C C C C C C C C C C C C C C C C
1001	ECEAOJK470	Electrolytic 6.3V 47	1		C3076	ECCZ1H390J	Ceramic	500	39P	1 -	
3002	ECKF1H103ZF	Ceramic 50V 0.01	1		C3077	ECCF1H150KC		50V	15P	1	
3003	ECEA1AN220S	Electrolytic 10V 22	1		C3078	VCKW1H561JSA			60P	1	
3004	ECEATEK4R7	Electrolytic 25V 4.7	1		C3079	ECEATASS221			- 1		
3005	-				[]			100	220	1	
3006	ECEAOJK330	Electrolytic 6.3V 33	1		C3080,3081	ECEAOJK470		6.3V	47	1	
	ECQV05333JZ	Polyester Film 50V 0.033	1		C3082-3084	ECEA1CK100		160	10	3	
007	VCKW1H621JSA	Ceramic 50V 620P	1		C3085	ECEAOJK330	Electrolytic	6.3V	33	1	
008	ECEAIASS221	Electrolytic 10V 220	1		C3086	ECCF1H470J	Ceramic	50V	47P	1	
009	ECEAOJK470	Electrolytic 6.3V 47	1		C3087-3088	ECEA1CK100		164	10		
010	ECEAICK100				C3089	ECCZ1H270KC					
011	ECEAOJK470	Electrolytic 16V 10 Electrolytic 6.3V 47	1		C3090	ECAM1H272KZ	Polyester Film		27P	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pes / Set	Remarks
C3091,3092	ECKZ1H472ZF	Ceramic 50V 0.0047	2				CHROMINANCE & AUDIO C.B.A		
C3093	ECEAOJK330	Electrolytic 6.3V 33	1						
C3094	ECEATAK330	Electrolytic 10V 33	1				AUDIO SECTION		
C3095	ECEAOJK220	Electrolytic 6.3V 22	1			1			
C3096	ECEAOJK470	Electrolytic 6.3V 47	1						
C3097,3098	ECEAOJSS471	Electrolytic 6.3V 470	2				Integrated Circuit		
C3099	VCKW1H22JSA	Ceramic 50v 0.0012	1		104001	AN262		1	
C3100	ECEA1AK470	Electrolytic 10V 47	1					1	
C3101	ECEA1AK330	Electrolytic 10V 33	1		1	-		 	
C3102	ECCZ1H470J	Ceramic 50V 47P	1					+	
C3103	ECCF1H27OKC	Ceramic 50V 27P	1				Transistors		
C3104	ECEA1HK010	Electrolytic 50V 1	1		Q4001,4002	2SD661 (S,T)		2	
C3105	ECEATAK330	Electrolytic 10V 33			Q4003-4005	2SD636 (R,S)		3	
C3106	VCY25473KX	Semi Conductor 0.047	ì		Q4006	2SB641 (R,S)			
£3107	ECEA1ASS101	Electrolytic 10V 100	1		Q4007-4012	2SD636 (R,S)		6	
C3108	ECCZ1H470K	Ceramic 50V 47P	1		Q4015-4018				
C3109	ECKW1H102ZF5	-	1		Q4020,4021	2SD636 (R,S)		4	
	ZOKA INTOZZI J	Ceramic 50V 0.001			Q4020,4021	2SD636 (R,S)		2	
	- i	C-11-			1		ļ		
L3001,3002	111.00((====1	Coils			-				
	VLQS66F221K	220	2			1			
L3003	VLQS66F820K	82	1_				Diodes		
L3004	VLQS66F181K	180	1		D4001-4009	MA165		9	
L3005	VLQS66F270K	27	1			or ISS119			
L3006	VLQS66F101K	100	1		D4012	MA165		1	
L3007	VLQS66F181K	180	1			or ISS119	_		
L3008	VLQS66F3R3K	3.3	1		D4013	MA26TO(B)	Zener	1	· · · · · · · · · · · · · · · · · · ·
L3009	VLQS66F330K	33	1		D4015	MA165		1	
L3010	VLQS66F3R3K	3.3	1			or ISS119			
3011	VLQS66F180K	18	1		1	0. 100.15			
.3012	VLQS66F221K	220	1		i				
.3013	VLQS66F151K							-	
.3014	VLQS66F471K	150	1		l				
3015,3016	-	470	1				Resistors		
.3017	VLQS66F100K		2		R4001	ERDIOTJ333	33K	1	
	VLQS66F471K	470	1_		R4002	ERDIOTJ272	2.7K	1	
3018	VLQS66F221K	220	1		R4003	ERDIOTJ683	68K	1	
.3019	VLQS66F181K	180	1		R4004	ERD10TJ224	220K	1	
3020	VLQS66F471K	470	1		R4005	ERDIOTJ153	15K	- 1	
13021,3022	VLQS66F101K	100	2		R4006	ERDIOTJ104	100K	1	
3023	VLQS66F2R7K	2.7	1		R4007	ERDIOTJ272	2.7K	1	
					R4008	ERDIOTJ331	330	1	
					R4009	ERDIOTJ472	4.7K	1	
					R4010	ERDIOTJ393	39K	1	
					R4011	ERD10TJ682	6.8K	1	
		<u> </u>	-		R4012	ERDIOTJ392	t	1	
	1	Filters			R4013	ERDIOTJ221	3.9K		
L3001	VLF0135		1		R4014	ERDIOTJ103	220	1	
L3002	VLF0097	PB.LPF	1				10K	1	
L3003	VLF0100	LPF			R4015	ERDIOTJ562	5.6K	1	
L3004	VLF0136		1		R4016	ERD10TJ223	22K	1	
	VEF0130		1		R4017	ERDIOTJ103	10к	1	
					R4018	ERDIOTJ100	10	1	
		1			R4019	EVN38CA00B53	Variable 5K	1	
			į		R4020	ERDIOTJ223	22K	1	
					R4021	ERD10TJ221	220	1	
			Ţ		R4022	ERD10TJ681	680	1	
					R4023	EVN38CA00853	Variable 5K	1	
			1		R4024	ERDIOTJ561	560	1	-
		Delay Line	\neg		R4025	ERDIOTJ273	27K	+	
3001	VLD0022		1		R4026	ERD10TJ332	3.3K	1	
	or EFDKN645A12	Α	_		R4027	ERDIOTJ333			
			-		R4027	ERD10TJ222	33K	1	
	-		\rightarrow				2.2K	1	
					R4029	ERDIOTJ182	1.8k	1	
			\rightarrow		R4030	ERDIOTJ183	18K	1	
					R4031	ERDIOTJ102	1 K	1	
-	ļ		_		R4032	ERD10TJ470	47	1	
					R4033	ERD10TJ223	22 K	1	
			- !		R4034	ERDIOTJ333	33K	1	
	<u> </u>				R4035	ERDIOTJ333	33K	1	
	l		T	-	R4036	ERD25TJ105	1/4W 1	1	
				1000	R4037	ERD25TJ474	1/4W 470K	1	
			-		R4038,4039	ERDIOTJ333	33K	2	

Ref. No.	Part No.	Part Name & Description	Pca / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R4040	ERD10TJ223		1		C4043	ECEATAK470	Electrolytic 10V 47		
R4041,4042	ERD10TJ472	4.7K	2		C4045	ECEA1ASS101	Electrolytic 10V 100		
R4043	ERDIOTJ470	47	1		C4046	ECEA1EK4R7	Electrolytic 25V 4.7	1	
R4044	ERD10TJ223	22K	1		C4050	ECQV05473JZ	Polyester Film 50V 0.047	1	
R4045	ERDIOTJ103	10K	1		C4051	ECQV05154JZ	Polyester Film 50V 0.15	1	
R4046	ERDIOTJ562	5.6K	1		C4052	ECKW1H103ZF5	Ceramic 50V 0.01	ī	
R4047	ERDIOTJ223	22K	1					-	
R4048	ERDIOTJ103	lok	1						**************************************
R4049	ERD10TJ473	47K	1						
R4050	ERD10TJ103	10K	1				Coils		
R4051	ERD10TJ331	330	1		L4001	VLQ7H222J	2.2m	1	
R4052	ERD10TJ223	22K	1		L4002	VLQS66F102K	l m	. 1	
R4053,4054	ERDIOTJ333	33K	2		L4003	VLQ7H222J	2.2m	1	,
R4055	ERDIOTJ562	5.6K	- 1		L4004	VLT0089		1	
R4056	ERDIOTJ4R7	4.7	- 1		L4005	VLQS66F471K	470	1	
R4057	ERDIOTJ103	10К	1	7,10			1		
R4058-4060	ERD10TJ223	22K	3					_	
R4061,4062	ERDIOTJ103	10K	2						
R4063	ERD10TJ223	22K	1				Transformer		
R4064	ERDIOTJ103	10K	1		T4001	VLT0108		· i	
R4067	ERDIOTJ153	15K	1		1			· · · · · · · · · · · · · · · · · · ·	
R4069	ERDIOTJ561	560	1		1				
R4071	ERDIOTJ101	100	1		1	-	•		
R4072	ERDIOTJ154	150К	1				Relays	-	
R4080	ERDIOTJ223	22K	1		RY4001	V\$Y\$0004		1	
R4081	ERDIOTJ681	680	1		RY4002	VSYS0006		1	
R4082	ERDIOTJ223	22K	1		X11002	73130000	White shaded and a significant shaded	<u>'</u>	
R4083	ERDIOTJ333	33K	i		1		7.17 (1.18)		The state of the s
R4084	ERD10TJ183	18K	i		1		ļ		
	-	Tok			1		<u> </u>		
					1		***************************************		
		Capacitors							
C4001	ECKZ1H561KB	Ceramic 50V 560P	1				V		MINISTER A MINISTER CONT. OF SAN ARRANGE CONTRACT AND STATE OF CON
C4002	ECEATVK3R3	Electrolytic 35V 3.3	1	4.	1				
C4003,4004	ECEAOJK101	Electrolytic 6.3V 100						- !	
C4005	-		2		 		CHROMINANCE SECTION		
C4006	ECEAOJK330	Electrolytic 6.3V 33	1		1		CHROMINANCE SECTION		
C4007	ECEA1CK100	Electrolytic 16V 10	1						and plant it bas base. Will the
C4008	ECQV05274JZ	Polyester Film 50V 0.27	1				1.4 1.61		
C4009	ECEATHKORT	Electrolytic 50V 0.1	1		108001	AN6360	Integrated Circuits		
C4010	ECEAOJK330	Electrolytic 6.3V 33			108002			1	
C4011	ECQV05333JZ	Polyester Film 50V 0.033	1		108003	AN6361N		1	The second secon
C4011	ECEAICK100	Electrolytic 16V 10	I .		108004	AN6362		- !	
C4012	ECEATAK470	Electrolytic 10V 47	1		100004	AN6342N		1	
C4013	or ECEAICK470								
C4014	ECEAICK100	Electrolytic 16V 10	1						
	ECEATVK3R3	Electrolytic 35V 3.3	1	- W. C.					
C4015	ECEA1HK010	Electrolytic 50V 1	1				Transistors		
C4016	ECEA1CK220	Electrolytic 16V 22			Q8001	2\$C2206 (B)		1	
C4017	ECEA1HKR22	Electrolytic 50V 0.22			Q8002	2SB641 (R,S)		1	
C4018,4019	ECEAICK100	Electrolytic 16V 10		7112	Q8003	25B641 (R,S)		1	
C4020	ECEATCK300	Electrolytic 16V 33	1						
C4021	ECEAICK220	Electrolytic 16V 22	1						
C4022	ECEAOJK101	Electrolytic 6.3V 100	1				Diodes		
C4023	ECEAICK100	Electrolytic 16V 10	1		D8001-8005	MA165		5	
C4024	ECKF1H103ZF	Ceramic 50V 0.01	1			or 155119			
C4025	ECAMIH102KZ	Polyester Film 50V 0.001	1						
C4026,4027	ECEA1HK010	Electrolytic 50V 1	2						
C4028	ECEATHKR47	Electrolytic 50V 0.47	1	17/2				I	
C4029	ECEAICK100	Electrolytic 16V 10	1				Resistors		
C4030	ECAM1H562KZ	Polyester Film 50V 0.0056	1		R8001	ERDIOTJ563	56K	1	
C4031	ECEATHKR22	Electrolytic 50V 0.22	1	Make Million and Control of the Cont	R8002	ERD10TJ103	10K	1	
C4032	ECQV05224JZ	Polyester Film 50V 0.22	1		R8003	ERDIOTJ102	1K	1	
04033	ECQV05104JZ	Polyester Film 50V 0.1	1		R8004	ERDIOTJ680	68	1	
04034	ECEA1CK100	Electrolytic 16V 10	1		R8005	ERDIOTJ122	1.2K	1	1000
4035	ECV1ZW40X64	Trimmer 40P	1		R8007	ERD10TJ152	1.5K	1	
24036	ECQF6152KZ	Polyester Film 630V 0.0015	1		R8008	ERDIOTJ122	1.2K	1	
4037,4038	ECAMIH472KZ	Polyester Film 50V 0.0047	2		R8009	ERD25TJ684	1/4W 680K	1	
			1		R8010	ERD25TJ105	1/4W 1M	1	
4033	ECEATAK470	Electrolytic 10V 47	1 1						
	ECEAICK100	Electrolytic 10V 47 Electrolytic 16V 10			R8011	ERDIOTJ102	1K	1	

Ref. No.	Part No.	Part Name & Description	Pes / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs /	Remarks
R8013	ERDIOTJ222	2.2K	1		C8047	ECCZ1H100FC6	Ceramic 50V 10F	-	
R8014	ERDIOTJ102	1 K	1		C8048	ECVIZW10X53N	Trimmer 10P	_	
R8015	ERD10TJ122	1.2K	1	100	C8049	ECEATAK330	Electrolytic 10V 33	_	
R8016	ERDIOTJ391	390	1	The second secon	C8050	ECKF1H472ZF	Ceramic 50V 0.0047	-	
R8017	EVN38CA00B53	Variable 5K	1	-	C8051	ECCF1H151KC	Ceramic 50V 150P	-	
R8018,8019	ERD10TJ391	390	2		C8052	ECCW1H101KC5	Ceramic 50V 100P	_	
R8020	ERD10TJ224	220K	1		C8053	ECV1ZW20X53N	Trimmer 20P	-	<u> </u>
R8021	ERD10TJ273	27K	1		C8054	ECCZ1H150JC	Ceramic 50V 15P	_	
R8022,8023	ERD10TJ272	2.7K	2		C8055	ECKZ1H472ZF	Ceramic 50V 0.0047	_	
R8024	EVN38CA00B23	Variable 2K	1		C8056	ECEA1CK100	Electrolytic 16V 10		
R8026	ERDIOTJ562	5.6K	1		c8057	ECKW1H182KB5	Ceramic 50V 0.0018	_	
R8027	ERDIOTJ392	3.9K	1		C8059	ECCF1H121KGV	Ceramic 50V 120P		
R8028	ERD25TJ471	1/4W 470	1		C8060	ECCZ1H121KGV	Ceramic 50V 120P		
R8029	EVN38CA00852	Variable 500	1		C8061	ECKZ1H472ZF	Ceramic 50V 0.0047		
R8030	ERDIOTJ333	33K	1		C8062	ECKW1H102ZF5	Ceramic 50V 0.001		_
R8032,8033	ERDIOTJ103	10K	2		€8064	ECKW1H103ZF5	Ceramic 50V 0.01	1	
R8035	ERD10TJ562	5.6K	1				501 0.01	<u> </u>	
R8036	ERDIOTJ102	1K	1						
R8037	ERD10TJ472	4.7K	1		1				
R8038	ERDIOTJ394	390К	1				Colls		
R8039	ERD10TJ222	2.2K	1		L8001	VLQ\$66F471K	470	1	
R8040	ERDIOTJ334	330K	1		L8002	VLQS66F221K	220		
R8042	ERDIOTJ392	3.9K	1		L8003,8004	VLQS66F180J	18		
R8043	ERDIOTJ182	1.8K	3		18005	VLQ7H682J	6.8m		1
R8044	ERD10TJ102	1K	1		L8006	VLQS66F390K	39		
R8045	ERDIOTJ122	1.2K	1		L8007	VLQS66F221K	220		
R8046	ERDIOTJ681	680	1	The Actual State S	L8008	VLQS66F560K	56		
R8047	ERD10TJ222	2.2K	1		L8009	VLQS66F680K	68		
R8049	ERD1OTJ183	18K	1		L8010,8011	VLQS66F221K	220		
R8050	ERD10TJ562	5.6K	1		L8012	VLQS66F471K	470		
R8051	ERDIOTJ472	4.7K	1		L8013	VLQS66F221K	220		
		Capacitors			L8014	VLQS66F331K	330		
C8001	ECKZ1H472ZF	Ceramic 50V 0.0047	1				350		
C8002	ECQM1H153KZ	Polyester Film 50V 0.015	1			i			
C8003,8004	ECKZ1H472ZF	Ceramic 50V 0.0047	2	**]				
C8005	ECKW1H103ZF5	Ceramic 50V 0.01	1				Filters		
C8006	ECEA1AK330	Electrolytic 10V 33	1		FL8002	VLF0137		1	
C8007	ECKW1H103ZF5	Ceramic 50V 0.01	1		FL8003	VLF0102	LPF	1	
C8008	ECKZ1H681KB	Ceramic 50V 680P	1		FL8004	VLF0104	BPF	1	
C8009	ECKW1H103ZF5	Ceramic 50V 0.01	1		FL8005	VLF0105	BPF	1	
C8010-8012	ECKZ1H472ZF	Ceramic 50V 0.0047	3						
C8014	ECEATHK010	Electrolytic 50V 1	1						
C8015	ECEATEK4R7	Electrolytic 25V 4.7	1						
68016	ECKZ1H681KB	Ceramic 50V 680P	1				Delay Line		
C8017	ECKW1H103ZF5	Ceramic 50V 0.01	1		DL8001	VLD0019	711	1	
C8018	ECEA1HK010	Electrolytic 50V 1	1						
C8019	ECKZ1H221KB	Ceramic 50V 220P	ı						
C8020	ECKZ1H471KB	Ceramic 50V 470P	1	P 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2					
C8022	ECKW1H103ZF5	Ceramic 50V 0.01	1				Crystals		
C8023	ECCF1H470KGV	Ceramic 50V 47P	-1		x8001	VSX5		1	
C8024,8025	ECKZ1H472ZF	Ceramic 50V 0.0047	2		X8002	vsx0060		1	-
C8026		Polyester Film 50V 0.001	1						
C8027	ECOMIH183KZ	Polyester Film 50V 0.01	1						, , , , , , , , , , , , , , , , , , ,
C8028	ECEAICK100	Electrolytic 16V 10	1				1		
C8029	ECCWIHI21KC5	Ceramic 50V 120P	1				Connectors		
C8030	ECCW1H181KC5	Ceramic 50V 180P	1		P17		3P	1	
C8013,8032	ECEAIAK330	Electrolytic 10V 33	2		P18		5P	1	
C8033	ECKZ1H472ZF	Ceramic 50V 0.0047	1						
C8034	ECEA1HK010	Electrolytic 50V 1	1						
C8035,8036	ECEA1HKOR1	Electrolytic 50V 0.1	2						
C8037	ECCZ1H270K6	Ceramic 50V 27P	1				Miscellaneous		
C8038	ECKZ1H472ZF	Ceramic 50V 0.0047	1	700			Check Terminal		
C8039		Ceramic 50V 0.0047	_1_	w				\neg	
C8040	ECKZ1H472ZF	Ceramic 50V 0.0047	1					_	
C8041	ECEATHK2R2	Electrolytic 50V 2.2	1						
C8042	ECCZ1H820K	50V 82P	1						
C8043		Polyester Film 50V 0.01	1			-			
C8044	ECEAICK100	Electrolytic 16V 10	1						
C8045	ECKZ1H472ZF	Ceramic 50V 0.0047	1						
C8046	ECCZ1H080DC6	Ceramic 50V 8P	1					\neg	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
	+	SYSTEM CONTROL C.B.A.			R6042	ERD10TJ123	12K	1	
					R6043,6044	ERD10TJ274	270K	2	
		SYSTEM CONTROL I, SECTION			R6045,6046	ERD10TJ561	560	2	
					R6047	ERDIOTJ393	39K	1	
		1			R6048	ERD10TJ273	27K	1	
	upply 50200	Integrated Circuits	1		R6049	ERD10TJ393	39K	1	
106001	uPD4503BC or HD14503BP		'	,	R6050	ERDIOTJ273 ERDIOTJ153	15K	1	
106002	μPC339C		1		R6052	ERDIOTJ333	33K	1	
106003	VCR0029	N. O. Carlon and P. C.	1		R6053	ERD10TJ223	22K	1	
1,000					R6054	ERDIOTJ103	10K	1	
					R6055	ERD10TJ223	22K	1	
					R6056	ERDIOTJ103	10K	1	
		Transistors			R6057	ERD10TJ224	220K	1	
Q6001,6002	2SB641 (Q,R,S)		2		R6058	ERDIOTJ183	18K	1	
Q6003,6004	2SD636 (Q,R,S)		2		R6059	ERDIOTJ101	100	1	
Q6005-6010	2SB641 (Q,R,S)		6		R6060	ERDIOTJ153	15K	1	
Q6011,6012	2SD636 (Q,R,S)		2		R6061	ERDIOTJ123	12K	1	
Q6013	2SB641 (Q,R,S)	• • • • • • • • • • • • • • • • • • • •		x 100 x 00 00 00	R6062	ERDIOTJ153	15K	1	
Q6014	2SD636 (Q,R,S)	A	1		R6063	ERDIOTJ101	100	1	
Q6015	2SC1847V (Q,R)		1		R6064	ERDIOTJ563	56K	1	
Q6016 Q6017	2SB641 (Q,R,S) 2SD636 (Q,R,S)		1	m(m # 3	R6065	ERD10TJ221 ERD10TJ333	220 33K	1	
Q6018	2SB641 (Q,R,S)		1		R6067	ERD25TJ223	1/4W 22K	i	
Q6019	25C1847V (Q,R)		1		7	2.102310223	1/TW 22K	•	
Quuis	or 2SD882 (P,Q		m						
Q6020,6021	2SB641 (Q,R,S)	***************************************	2	allow to			Capacitors		
Q6022,6023	2SD636 (Q,R,S)		2		C6001	ECKF1H102KB	Ceramic 50V 0.001	1	
Q6024	258641 (Q,R,S)		1		C6002	ECQV05153JZ	Polyester Film 50V 0.015	1	
Q6025	2SD636 (Q,R,S)		1		C6003	ECEAOJK470	Electrolytic 63V 47	1	
					C6004	ECEA16Z33	Electrolytic 10V 33	1	
		Diodes		- Address	c6005	ECEAOJK470	Electrolytic 6.3V 47	1	
D6001-6012	MA165		12		C6006	ECQV05104JZ	Polyester Film 50V 0.1	1	
	or ISS119				C6007	ECEA1CK100	Electrolytic 16V 10	1	
D6014-6016	MA165		3		C6008	ECKW1H103ZF	Ceramic 50V 0.01	1	
D6017	or ISS119 ERB12-01	ļ	1	and of the American State of the State of th		1	Switches	,	
00017	or EMIZ				SW6001-6004	EVQPXP04K	Puse Switch	4	
D6018	LN28RCPP	L.E.D.	1	artist har half a mornison material	SW6005	ESD14121	Memory Switch	4	
D6019	LN48YCPP	L.E.D.	1	**	sw6006-6009	EVQPXP04K	Puse Switch	1	
D6020-6025	LN28RCPP	L.E.D.	6	and a few constants of the second	SW6010 SW6011	ESD14119 ESD14120	Remote Control Switch SP/LP/SLP Switch	1	
D6027-6029	MA165		3		SW6012	EMR252	Power Switch	i	BRANCE DISTRICT
	or ISS119		-		7.000				All control of the co
D6031,6032	MA165 or ISS11								
D6033		9	2		-				
	MA165 or ISSII	i comment	2						
	MA165 or ISSII	i comment	-	A COMMENT					
		i comment	-						
R6001	ERD10TJ104	Resistors 100K	1						
R6002-6005	ERD10TJ104 ERD10TJ223	Resistors 100k 22k	1 4						
R6002-6005 R6006	ERDIOTJ104 ERDIOTJ223 ERDIOTJ104	Resistors 100k 22k 100k	1 4 1						
R6002-6005 R6006 R6007-6009	ERDIOTJ104 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223	Resistors 100k 22k 100k 22k	1 4 1 3						
R6002-6005 R6006 R6007-6009 R6010,6011	ERDIOTJ104 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473	Resistors 100k 22k 100k 22k 47k	1 4 1 3 2						
R6002-6005 R6006 R6007-6009 R6010,6011	ERDIOTJ104 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473 ERDIOTJ124	Resistors 100k 22k 100k 22k 47k 120k	1 4 1 3 2 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012	ERDIOTJ104 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473 ERDIOTJ124 ERDIOTJ563	Resistors 100K 22K 100K 22K 47K 120K 56K	1 4 1 3 2 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014	ERDIOTJI04 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473 ERDIOTJ124 ERDIOTJ563 ERDIOTJ223	Resistors 100k 22k 100k 22k 100k 120k 120k 120k 1	1 3 2 1 1 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473 ERDIOTJ124 ERDIOTJ263 ERDIOTJ223 ERDIOTJ223	Resistors 100k 22k 100k 22k 47k 120k 56k 22k 100k	1 3 2 1 1 1 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ104 ERDIOTJ104 ERDIOTJ223 ERDIOTJ124 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223	Resistors 100k 22k 100k 22k 47k 120k 55k 22k 100k 22k 22k 22k 22k 22k 22k 22k 22k 22k	1 3 2 1 1 1 1 8						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ223 ERDIOTJ24 ERDIOTJ24 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223	Resistors 100k 22k 100k 22k 120k 22k 120k 22k 100k 22k 120k 22k 100k 22k 560 560	1 4 1 3 2 1 1 1 1 1 8 8 2						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223	Resistors 100k 22k 100k 22k 47k 120k 22k 100k 22k 100k 22k 100k 22k 560 220k 220k	1 1 3 2 1 1 1 1 1 8 2 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ223 ERDIOTJ24 ERDIOTJ24 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223	Resistors 100k 22k 100k 22k 47k 120k 22k 100k 22k 100k 22k 100k 22k 560 220k 220k	1 1 3 2 1 1 1 8 2 1 1 8 2 1 1 4						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6026 R6027-6030	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ473 ERDIOTJ124 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224	Resistors 100k 22k 100k 22k 47k 120k 56k 22k 10k 560 22k 186	1 1 3 2 1 1 1 8 2 1 1 8 2 1 1 4						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6026 R6027-6030	ERDIOTJ104 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224	Resistors 100K 22K 100K 22K 47K 120K 56K 22K 10K 22K 10K 10K 10K 10K 10K 10K 10K 10K 10K 10	1 1 3 2 1 1 1 8 2 1 4 4 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6024,6025 R6027-6030 R6031 R6031	ERDIOTJI04 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ183 ERDIOTJ101 ERDIOTJ103	Resistors 100k 22k 100k 22k 47k 120k 56k 22k 10k 22k 10k 36k 100 10k 33k	1 1 3 2 1 1 1 1 8 8 2 1 1 4 1 1 2 2						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6024,6025 R6027-6030 R6031 R6031 R6031 R6034 R6034	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ104 ERDIOTJ223 ERDIOTJ124 ERDIOTJ124 ERDIOTJ223 ERDIOTJ123 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ244 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103	PRESISTORS 100K 22K 100K 47K 120K 56K 22K 10K 22K 10K 10K 10K 10K 10K 10K 10K 10K 10K 10	1 1 3 2 1 1 1 1 8 8 2 1 1 4 1 1 2 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6027-6030 R6031 R6032,6033 R6034 R6035 R6036 R6037	ERDIOTJIO4 ERDIOTJIO4 ERDIOTJ223 ERDIOTJ473 ERDIOTJ24 ERDIOTJ24 ERDIOTJ223 ERDIOTJ23 ERDIOTJ23 ERDIOTJ23 ERDIOTJ23 ERDIOTJ23 ERDIOTJ223 ERDIOTJ224 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103 ERDIOTJ333 ERDIOTJ473	PRESISTORS 100K 22K 100K 47K 120K 56K 22K 10K 22K 10K 10K 10K 10K 10K 10K 10K 10K 10K 10	1 1 3 2 1 1 1 8 2 1 1 4 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6027-6030 R6031 R6032,6033 R6034 R6035 R6036 R6037 R6036	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ473 ERDIOTJ24 ERDIOTJ24 ERDIOTJ25 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103 ERDIOTJ103	PRESISTORS 100K 22K 100K 22K 47K 120K 56K 22K 10K 22K 10K 10K 22K 10K 10K 10K 10K 10K 10K 10K 10K 10K 10	1 1 3 2 1 1 1 8 2 1 1 4 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6026 R6027-6030 R6031 R6032,6033 R6034 R6035 R6036 R6037 R6038 R6037	ERDIOTJ104 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ227 ERDIOTJ2333 ERDIOTJ473 ERD25TJ102 ERDIOTJ563 ERDIOTJ563 ERDIOTJ271	Resistors 100k 22k 100k 22k 47k 120k 56k 22k 10k 22k 10k 33k 174W 114W 156k 338k 270	1						
R6002-6005 R6006 R6007-6009 R6010,6011 R6012 R6013 R6014 R6015 R6016-6023 R6024,6025 R6027-6030 R6031 R6032,6033 R6034 R6035 R6036 R6037 R6036	ERDIOTJIO4 ERDIOTJ223 ERDIOTJ24 ERDIOTJ24 ERDIOTJ24 ERDIOTJ2563 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ223 ERDIOTJ224 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ223 ERDIOTJ223 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ224 ERDIOTJ333 ERDIOTJ333 ERDIOTJ473 ERD25TJ102 ERDIOTJ563 ERDIOTJ563	Resistors 100k 22k 100k 22k 47K 120k 56k 22k 10k 22k 10k 22k 10k 33k 47K 11/4W 11k 56k 33k 270 68k	1						

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		SYSTEM CONTROL II SECTION			R6229	ERDIOTJ123	12K	1	
					R6230	ERDIOTJ563	56K	1	
				1	R6231	ERDIOTJ393	39K	1	
		Integrated Circuits			R6232	ERDIOTJ274	270K	1	
106201	MN1405V1		1		R6233	ERD10TJ102	1K	1	
106202,6203	μPD4503BC		2		R6234	ERD10TJ472	4.7K	1	
lacant -	or HD14503BP				R6235	ERD10TJ562	5.6K	1	
106204	VCR0016		1		R6236,6239	ERD10TJ103	10K	4	
106205	AN6912		1		R6240	ERD10TJ223	22K	1	
106206	or µPC339C				R6241	ERD10TJ102	1K	1	
110206	VCR0027		1		R6242	ERD10TJ223	22K	1	
					R6243,6244	ERD10TJ223	22K	2	
					R6245	ERDIOTJ103	10K	1	
	-	Transistors			R6246	EXBP85103K	Complex Component 10K	1	
Q6201-6203	2SD636 (Q,R,S)	ITANSISTORS	-		R6247	ERDIOTJ103	10K	1	
Q6204,6205	2SB641 (Q,R,S)		2		R6248,6249	ERDIOTJ223	22K	-	
Q6206-6208	2SD636 (Q,R,S)				R6250	ERDIOTJ124	120K	1	
Q6209	25C1684 (Q,R,S)		3		R6251	ERDIOTJ103	10к	1	
Q6210	2SD638 (Q,R,S)		1		R6252,6253	ERDIOTJ473	47K	2	
Q6211	2SD636 (Q,R,S)	1	1		R6254	ERD10TJ104	100K	1	
Q6212	25C1684 (Q,R,S)		1		R6255	ERD10TJ103	10K	1	
QUETE	or 25C1685 (Q,F		-	744	R6256	ERD10TJ223	22K	1	
Q6213	2SD636 (Q,R,S)	,3)	1	7.2.	R6257	ERDIOTJ104	100K	1	
Q6214	25B641 (Q,R,S)		1		R6258	ERD10TJ562	5.6K	1	
Q6215,6216	2SD636 (Q,R,S)		2	V 100 100 100 100 100 100 100 100 100 10	R6259	ERDIOTJ104	100K	1	
Q6217	2SC1684 (Q,R,S)		1		R6260	ERD10TJ223	22K		
2-17	or 2501685 (Q,F	*******			R6261	ERD10TJ332	3.3K	1	
	0. 200,000 (2,1	,,07	-	***************************************	R6262,6263	ERD10TJ473	47K		
			-		R6264	ERD10TJ223	22K	1	
	-				R6265	ERD25TJ560	1/4W 56		1 to 1 1/10 to 2 to
		Diodes			R6266	ERDIOTJ103	10K	1	
D6201,6202	MA165	J.0003	2		R6267	ERDIOTJ473	47K	1	
D6203	RD5.6JB	Zener	1		R6268	ERD10TJ562	5.6K	1	
D6204-6210	MA165		7		R6269,6270	ERD10TJ473	47K	2	
D6212-6213	MA165		7		R6271 R6272,6273	ERDIOTJ103 ERDIOTJ562	10K	1	
06214-6215	MA150		2		R6274	EVN38CA00B24	Variable 20K	2	
D6216-6220	MA165		5		R6275	ERDIOTJ223		1	
06221-6223	MA165		3	· · · · · · · · · · · · · · · · · · ·	R6276	ERDIOTJ473	22K	1	
		***	_		R6277	ERD25TJ104	1/4W 100K	1	
					R6278	ERDIOTJ563		1	
					R6279,6280	ERDIOTJ104	56K	-	
		Resistors			R6281-6284	ERDIOTJ223	100K	2	
R6201	ERD10TJ182	1.8K	1		R6285	ERDIOTJ103	22K	4	
R6202	ERD10TJ331	330	1		R6286	ERDIOTJ332	10K	1	
R6203	EVN38CA00B53	/ariable 5K	1		R6287-6289	ERD10TJ563	3.3K	1	
86204	ERDIOTJ562	5.6K	1		R6290	ERD25TJ563	56K	3	
86205	ERDIOTJ183	18K	1		R6291	ERDIOTJ223			
16206	ERD10TJ153	15K	1		R6292	ERDIOTJ104	22K	1	
86207	EVN38CA00B14	/ariable 10K	1		R6293	ERDIOTJ123	100K	1	
86208	ERDIOTJ183	18K	1		R6294	ERD10TJ333	12K	- 1	
16209	ERD25TJ105	1/4W 1M	1		R6295	ERD10TJ103	33K	1	
6210	ERD25TJ395	1/4W 3.9	1		R6296,6297	ERD25TJ102	10K	2	
6211	ERDIOTJ223	22K	1		, , , , ,	ENDEDITORE	1/4W 1K	2	
6212	ERD10TJ682	6.8K	1			-	Capacitors	-	
6213	ERD25TJ105	1/4W 1M	1		C6201	ECEATAK330		,+	
6214	ERDIOTJ124	120K	1		C6202	ECEAOJK220		1	
6215	ERDIOTJ103	10K	1		C6203	ECEAOJK101		1	
6216	ERD10TJ152	1.5K	-		C6204	ECEA25Z4R7	Electrolytic 6.3V 100	1	
6217	ERD10TJ682	6.8K	1		C6205	ECEAOJK470			
6218	ERD10TJ124	120K	1		C6206	EXFP6102Z	Complex Component 0.0012	1	
6219	ERD10TJ223	22K	-	7	C6207	ECQV05124JZ	Polyester Film 50V 0.12	1	
6220	ERDIOTJ154	150к	1		C6208	ECQV05104JZ	Polyester Film 50V 0.12	1	
6221	ERD10TJ104	100K	1		C6209	ECEAOJK470	Electrolytic 6.3V 47	1	
6222,6223	ERD10TJ103	10K	2		C6210	ECEATCK100	Electrolytic 16V 10	1	
6224	ERD10TJ102	1K	1		C6212	ECEA50Z1	Electrolytic 50V 1	1	
6225	ERDIOTJ104	100K	1		C6213	ECEAICNIOOS		-	
6226	ERD10TJ103	10K	1		C6214	ECCF1H101KGV	-	1	
/	ERD10TJ563	56K	1		-	-		1	
6227 6228	ENDIOISSOS	JUN	. ;	- 11	C6215	ECKF1H122KB	Ceramic 50V 0.0012	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		D.D. CYLINDER DRIVE C.B.A.			1		LOADING MOTOR DRIVE C.B.A		
	-								
	:								
		Integrated Circuit					Transistors		:
102501	AN6677		1 :		Q6401	25A886V(Q,R)		1	
			-			or 2SB772(P,Q)		ļ.,	
	+		-		Q6402 Q6403	2SD889(Q,R) 2SD636(Q,R)		1	4
		Transistor			Q6404,6405	2SB819(Q,R)		2	
Q2501	2SD636 (Q,R)	Transistor	1		Q6406	2SD636(Q,R)		1	
02501	230030 (Q,K)	-	-		Q4706,6408	2SD1051(Q,R)		2	
		:			Q6409-6412	2SD636(Q,R)		4	
								+	-
		Redistors				-			-
R2501	ERD10TJ152	1.5K	1				Diodes		
R2502	ERDIOTJ273	27K	1		D6402	MA1091A	Zener	- 1	
R2503	ERD10TJ561	560	1		D6403-6407	MA165		5	
R2504	ERDIOTJ153	15K				or ISS119			<u> </u>
R2505	ERDIOTJ331	470			D6408	MA1130A	Zener	1	i
R2506-2508	ERD10TJ470	47			D6410	MA165			
R2509	ERX12ANJR47	Metal Film 1/2W 0.47			-	or ISS119	·		
R2510	ERDIOTJ823	82K			 				
R2511	ERDIOTJ183	188	1		H	<u> </u>	Resistors	-	
	:	-			R6401	ERDIOTJ333	4	K 1	
			-		R6402	ERD10TJ473		K; 1	
		Capacitors		1. A	R6403	ERD10TJ273	27	-	
C2501	ECEA1CK100	1.4	1		R6404	ERD10TJ223	22	K 1	
C2502	ECKF1H472MD	Ceramic 50V 0.0047			R6405	ERD10TJ562	5.6	K 1	
C2503	ECKW1H103ZF5	Ceramic 50V 0.01	1		R6406	ERDIOTJ223	22	K 1	
C2504	ECEATHKR33	Electrolytic 50V 0.33	1		R6407	ERDIOTJ102	1	K 1	
C2505	ECEA1ASS101	Electrolytic 10V 100	1		R6408	ERDIOTJ152	1.5	_	i
C2506-2508	ECEATHKNR47	Electrolytic 50V 0.47			R6409	ERD25TJ471	1/4W 47		
C2509	ECAMIH103KZ	Polyester Film 50V 0.01	1		R6410	ERDIOTJ152	1.5	-	1
C2510	ECAMIH333KZ	Polyester Film 50V 0.01	1		R6411	ERD25TJ471	1/4W 47	-	T
R2511	ERDIOTJ183	18K	1	-	R6412	ERDIOTJ102			
+					R6413	ERDIOTJ223	22		
	+				R6414 R6415	ERD10TJ562 ERD25TJ331	5.6 1/4w 33		
		Capacitors			R6416	EVN38CA00B53	Variable 5		-
C2501	ECEA1CK100	Electrolytic 16V 10	1		R6417	ERQ12HJ3R9		9, 1	
C2502	ECKD1H472MD	Ceramic 50V 0.0047			R6418,6419	ERDIOTJ563		K 2	
C2503	ECKW1H103ZF5	Ceramic 50V 0.01	1		R6420	ERDIOTJ473	47		
C2504	ECEA1HKR33	Electrolytic 50V 0.33	1		R6421	ERDIOTJ103	10	K 1	
C2505	ECEA1ASS101	Electrolytic 10V 100	1		R6422,6423	ERDIOTJ223	22	K 2	
C2506-2508	ECEA1HKNR47	Electrolytic 50V 0.47							,
C2509	ECAM1H103KZ	Polyester Film 50V 0.01						-	
C2510	ECAM1H333KZ	Polyester Film 50V 0.033			-			-	
C2511	ECSF10F3R3KE	Tantalum 10V 3.3	4		-		Capacitors	:	
C2513-2515	ECEA1HKR22	Polyester Film 50V 0.0082 Electrolytic 50V 0.22			C6401	ECET16R682SW	· ·	0 1	
C2516	ECAM1H392KZ	Polyester Film 50V 0.0039			C6402,6403	ECEATEK4R7		7 2	
52510	ECANTRIJIZAZ	rolyestel Film 30V 0.0033	-		C6404.6405	ECKWIHI03ZF5		1: 2	
					C6410	ECKFIH221KB	Ceramic 50V 220	P: 1	
	+			1 miles	1		COMMON TO THE STATE OF THE STAT		
	+	Connector			·				
P001	VJPS1147	12P	1		1				
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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		JACK PANEL C.B.A.		
106551	0,000	Integrated Circuit	-	
100551	DN838		1	
		Transistors		
Q6501	2SD636(Q,R)	111013131013	1	
Q6551,6552	PN150NV	Photo	2	
20331,0332	THI JOHV	711010	- 2	
				
		Diodes	-	
06501	MA165	D10de\$		
06502	ROZZ		1 1	
50501	or ERC04-02E3			
06503	MA165			
06504	ERB81-004		1	
06504			1	
D6EE1 4FF2	or RK-14		<u> </u>	
D6551,6552	MA161C	1.50	2	
06553,6554	LN58	L.E.D.	2	
·				
	<u> </u>	Resistors		
R6501	ERD25TJ331		30 1	
R6502	ERD25TJ104	1/4W 100	OK 1	
86503	ERD25TJ153	1/4W 1	5K 1	
6504	ERD25TJ750	1/4W	75 1	
6505	ERD25TJ223	1/4W 22	2K 1	
6506	ERD25TJ471	1/4W 47	7K 1	
6507	ERG1ANJ221C	Metal Oxide IW 22	20 1	
6508,6509	ERD25TJ223	1/4W 22	2K 2	
6553	EVJL4A312B15	Tracking Variable	1	
6554	ERD25TJ222	1/4W 2.2	- · · · -	20,500
		Capacitors		
6501,6502	ECKW1H103ZF5	Ceramic 50V 0.0	2	
6558	ECKF1H103ZF5	50V 0.0	01 1	
			i	
		Relay		
Y6501	VSYS0006		1	
		Ţ'.		
	T		+	
	:	Switches	T :	
W6552	VSMS0003	Micro Switch	1	
w6553	VSM0027	Micro Switch	1	
	or VSMS0002			
		 		
+	1	<u> </u>		
		-		
	- :	Fuse		
6501	XBA1C30NV100	3A	1,+-	
	- ABATO JONVIOO	Jn	1	
	<u> </u>		-	
	-:		-	
	+		+ +-	
 5501	W. 10070	Miscellaneous	+	
5502	VJJ0070	Battery Jack	1	
	VJS1163	4P Jack	1	
5509 5510	VJJ0071	Earphone Jack	1	
	A110063	Remote Control Jack	1	
	ļ		1	
<u> </u>				
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	Part No.	Part Name & Description	Pcs / Set	Remarks
		ELECTRICAL PARTS LOCATED	† †	
		ON CHASSIS		
			+	117004-44
	TJE98101	CHECK TERMINAL	46	
	VSC0472	SHIELD CASE	1	
	VSC0474	SHIELD CASE	1	
	or VSCS0098			
1	VSC0476	SHIELD CASE	1	
	VSCS0076	SHIELD CASE	1	
	VSCS0077	SHIELD CASE	1	
	VSCS0078	SHIELD CASE	1	
	VSCS0079	SHIELD CASE	1	F1.
	VJC6320	FUSE HOLDER	4	7744.3
- :	VMZS0049	SHIELD COVER	1	
	VJP1158	F CONNECTOR	1	
	VECS0021	SHIELD PLATE	1	
	ENC16259	RF CONVERTOR	1	
-	VKC0033	HINGE	3	
	VKC0034	HINGE	1	
	VMGS0010	SPACER	1	-
	KL02	L.E.D. SPACER	8	
	VMDS0044	L.E.D. HOLDER	1	ARIAN III
	VMAS0365	WASHER	2	
	,VJBS0075	SAFETY TAB SWITCH P.C.B.	1	
	VJBS0098	DEW SENSOR CONNECTION 1		
		P.C.B.		
	VSES02	BATTERY METER	1	
	VEKS0637	LUG ASS'Y	1	• • •
:	VEKS0307	LUG ASS'Y	1	
	-			
				1,000
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